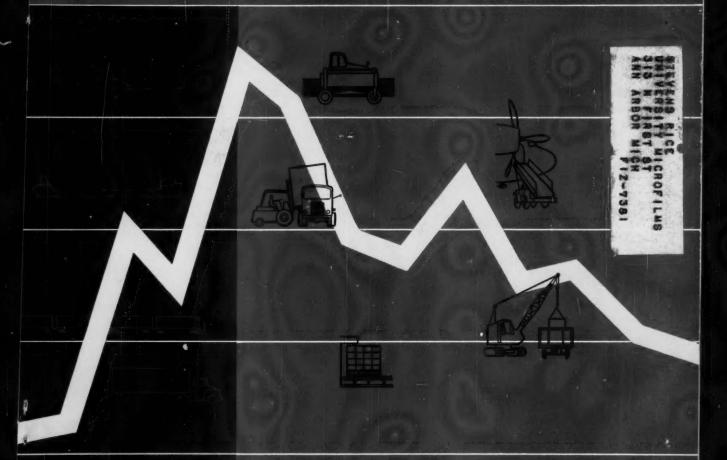
THE FIRST MAGAZINE OF MATERIAL HANDLING

**NOVEMBER 1957** 



CONTROLLING DISTRIBUTION COSTS — Big Shift To Mechanization



The FIRST magazine in the material handling industry.

• The preferred reading of more than 40,000 identified buyers of material handling, packaging and shipping equipment and supplies

### Moving 2 million lbs. of freight daily on



# Juliess Sasters

PATENTED
LEAK-PROOF
NEOPRENE
RETAINER MOLDED
AND VULCANIZED
ON UPPER
BEARING SWIVEL
RACEWAY.

THRUST BEARING/
GREASE RETAINER
TIGHTLY FITTED AROUND
FORMED, HARDENED
RACEWAY. CAN BE
EASILY REMOVED FOR
CLEANING OR INSPECTION

NEOPRENE RING
PERMANENTLY ATTACHED TO
METAL WASHER AND PRESS
FITTED INTO HUB.

The new West Coast terminal of Pacific Intermountain Express, Los Angeles, the largest of its kind, uses a 1400 foot long Towveyor system to help provide unmatched service for its customers. This system which is one of the nation's longest was developed to reduce materials handling costs, one of the major expenses in the transportation industry. Over 1200 Faultless equipped carts operate with a continuous under-floor drag line to move over

2 million pounds of freight daily. The carts are used for loading and unloading local and line haul trailers, 144 of which can be thus handled at one time. Faultless Series 900GS Grease Sealed Double Ball Bearing Swivel Plate Casters are used in this huge system.

#### 900 GS

#### GREASE SEALED CASTER

gives positive protection to Swivel and Wheel Bearings wherever Dirt, Steam, Chemicals or Water are encountered. Faultless Series 900GS medium duty, double ball bearing swivel plate casters are ideally suited to continuous operation. All bearings are sealed against dust, grime and water to protect the lubricated balls and raceways and to cut the cost of frequent re-lubrication. Series 900GS Casters are available with Semi-Steel, Rockite and Plaskite (hard tread) Wheels and Rubber Tired, Vulcanized and Ruberex (cushion tread) Wheels in 5", 6" and 8" diameters and with load capacities ranging

#### Series 9700GS Rigid Plate Caster

from 240 to 650 lbs. per caster.

Available with wheel types and sizes, load capacities and overall heights to match companion Series 900GS Swivel Plate Caster.

#### Ask your distributor

Your nearby Faultless Industrial Distributor maintains a substantial inventory of Faultless Casters for immediate delivery. He and one of the strategically located Faultless Sales Engineers are available to work with you on every handling problem in your plant. Both are listed in the Yellow Pages, under "Casters," beneath the Faultless heading.

#### Send for FREE Illustrated Literature

The Facts story of the Pacific Intermountain Express installation describes in detail how one Faultless Caster user solved a complex Materials Handling problem. Write for your copy—it may help you do the same—regardless of your kind or size of business.

Detailed specifications covering the full range of Faultless Series 900GS Caster types and sizes are yours for the asking.



#### Faultless. CASTER CORPORATION

Evansville 7, Indiana F-1

Please send □ copy of P.I.E. Facts, □ 900GS Caster Cat.

Name\_\_\_\_

Address

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Pneumatic Industrie Tire built with Triple-Tempered 3-T Cord

OT A JOB that's tough on tires? Give it to Goodyear's great all-new Super Rib. This baby's built to take anything—and proving it on all sorts of rugged operations.

The Super Rib is built with Triple-Tempered 3-T Cord to give it unusual strength and stamina. Its five broad ribs assure faster nonspin starts, safer nonskid stops. And its wide, flat tread provides greater stability for safer stacking.

The all-new Super Rib is available both in tubeless and tubetype in all popular sizes. For complete information, call your Goodyear dealer or write, Goodyear, Industrial Tire Sales, Akron 16, Ohio.

Use the Right Tire for the Job - Buy and Specify

GOODFYEAR

INDUSTRIAL TIRES

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## more proof-

only <u>Disowheel</u> moves heavy loads



specify new

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for your industrial trucks

CASE HISTORY 45—At a leading eastern food processing plant, one metal wheeled truck—carrying 50% overload consistently—was moving many tons of merchandise per day. After only four months of use, these wheels had broken up and defaced concrete floors in the plant. Result? Costly and time-consuming repairs! Next, rubber wheels were tried. But these failed in a matter of hours: one tire, in fact, "peeled" off the hub within two hours. When DISOWHEEL was tried—on the same truck, using the same size wheel (3½" x 2%"), carrying the same load, over the same floor—results were (after 5½

months of use and still in operation): no floor breaking, no bond failure, no down-time on truck!

DISOWHEEL uses a tire made of a new material—DISOGRIN®—a polyurethane elastomer "strong as steel, resilient as rubber". As tests prove, DISOWHEEL boosts load capacity, won't chew up floors. Also, it *outlasts* rubber and most synthetics 4 to 10 times; *resists* abrasion; *cuts* power consumption 35% or more!

Keep your trucks rolling more efficiently at less cost. Specify DISOWHEEL for new equipment, for replacements—you'll be glad you did!

\*Licensed for manufacture under U.S. Pat. 2,729,618

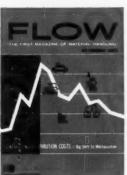


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FORMERLY GREER INDUSTRIES

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#### readers' guide to



#### for November 1957

COVER: Distribution costs have followed an upward trend as the complexities of getting the product into the hands of the user have increased. Mechanization of material handling and related activities has done much to hold distribution costs in check and, in many cases, to drive them downward.

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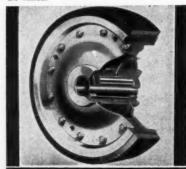
. . . You enjoy many money - saving features when you demand . . .

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#### FLOW

the first magazine of material handling

volume 13 number 2

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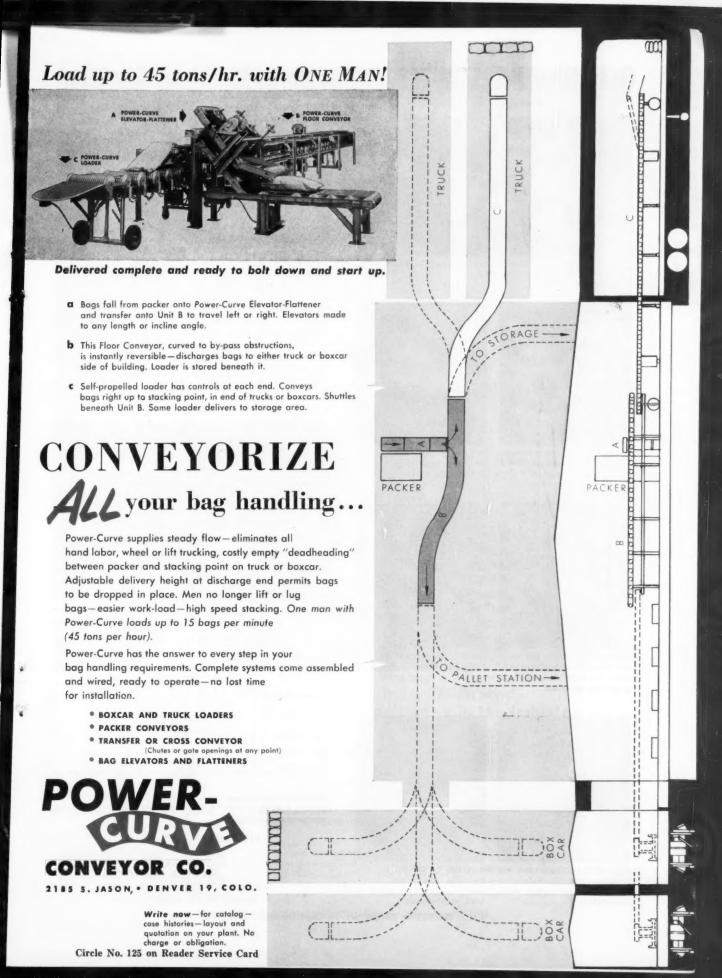
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#### NEXT MONTH IN FLOW there'll be a fine group of

articles on safety in handling operations, a round-up of latest techniques developed by and for fruit handling, two discussions on live-storage methods, disclosure of innovations in packaging techniques, and a report on the National Packaging & Handling Expo.



## Only New HALLOWELL ERECTOMATIC. Steel Shelving



STRAIGHT-IN, STRAIGHT-OUT SHELF CHANGE. No tilting. No dismantling. No interference with any other shelf.



INDEPENDENT SHELF POSITIONING. Each shelf can be repositioned individually in seconds.



**FULL USE OF SHELF AREA.** No tees or angles, and beaded posts save valuable space.



common side Panels and Posts save material between adjacent units in a rack. Back and side panels are one-piece.



BEADED POSTS AND FLANGED SHELVES prevent snagging of clothing or stored goods, protect workers.



FULL DEPTH SHELF SUPPORT. No buckling possible. Reinforcements can be added when required.



4 CLASSES OF SHELVES. Regular, medium, heavy and extraheavy construction meets all load requirements.

# cuts assembly time, permits fast repositioning of shelves —gives you these plus features

No matter what type of shelving you need-open, closed, bin units, ledge units, counters or cabinets-new Hallowell ERECTOMATIC® steel shelving makes the job easy. The unique built-in locking device\*—developed by SPS—speeds assembly and rearrangement of shelves. To position a shelf, slide it into place on the shelf supports, press the locks, and the shelf is locked. To reposition a shelf, release the locks, pull the shelf straight out, slide it straight in on its supports at the new location, and press the locks. It takes only seconds to do the complete job. Made of prime steel, phosphate coated, and finished in SPS green baked-on enamel-other colors are available. Hallowell Erectomatic steel shelving is stocked by leading industrial distributors and shop equipment dealers. For complete information, see the one nearest you. Or write Hallowell Shop Equipment Division, STANDARD PRESSED STEEL Co., Jenkintown 49, Pa.

\*Patent applied for



**TWO MEN ASSEMBLED** new Hallowell ERECTOMATIC steel shelving in just over 10 minutes. Closed unit was 36 in. wide, 18 in. deep, 7 ft. 3 in. high, complete with seven shelves. Standard models of other design required 13-55 min. Table shows test results.

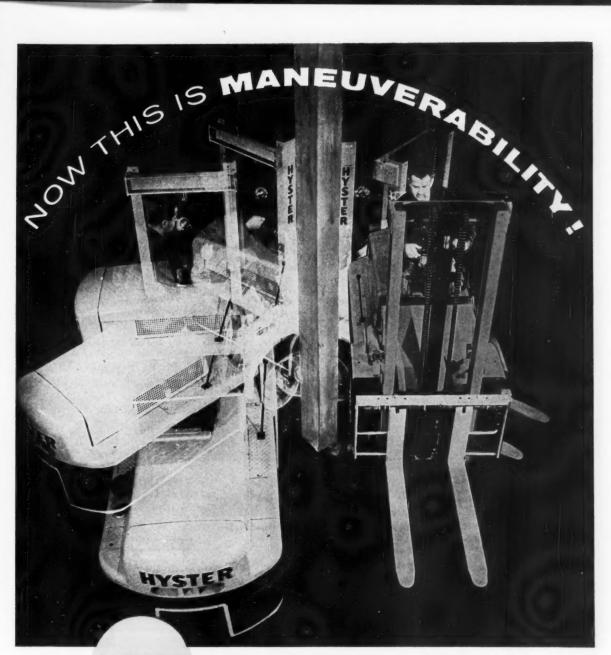
Brand	Time to Assemble (Min.)	Units Per Hour
Erectomatic	10.42	5.75
A	13.23	4.53
В	14.24	4.21
C	16.30	3.68
D	18.12	3.31
E	25.03	2.40
F	55.03	1.09

HALLOWELL SHOP EQUIPMENT DIVISION

STANDARD PRESSED STEEL CO.



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## HYSTER 4000-lb. Pneumatic Demonstrates Shortest Turning Radius in the Industry



Which makes possible:

NARROWER STACKING AISLE

more useable storage area

**GREATER OPERATOR CONFIDENCE** 

in close quarters

MORE WORK DONE PER DAY

under all conditions indoors and outdoors

Hyster's new line of Pneumatic Tired Trucks in the 3000, 4000 and 5000-lb. capacity range are the most maneuverable in the industry. See for yourself. Ask your Hyster Dealer for a demonstration.



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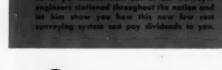
# NEW! DUR-A-GRID Metal Conveyor Belting

The least expensive metal belting . . . that will not stretch . . . lasts for years in high or low temperatures and humidity . . . available in stainless or plated steel.

DUR-A-GRID is Petersen's newest concept in conveying systems. It is made of link chains, sprocket driven, with products riding on the grids. One drive handles up to 150 running feet . . . available in standard or special widths . . . will not shrink or stretch . . . will operate per-

fectly in high or low temperatures . . . it will outlast ordinary belting by years . . . and it is the simplest conveying system to maintain. Where products must be in line, power disc turns or side bow link turns complete the system for the conveying of your products in the most efficient and economical way . . . the Petersen way. DUR-A-GRID Conveyors can be easily and inexpensively installed by either our engineers or your maintenance crew.

DUR-A-GRID METAL BELTING Conveying Systems are applicable to many industries. Bakeries, Foundries, Food Processors and many others find them the most efficient and economical in the long run.



#### THE PETERSEN OVEN CO.

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## that "NEEDED LIFT" can come from

You name the job or jobs to be done! We'll supply a crane or cranes that will do it. Standard Models in a wide range of styles, sizes and capacities will generally meet your requirements. If not, we'll engineer and build what you need. We've been doing it for more than 40 years.



### **CRANES & HOISTS**

TO

GET A EUCLID PROPOSAL



EUCLID HOISTS are highly efficient and strictly modern in every detail with oversize anti-friction bearings and heat treated steel parts in combination with a welded frame.

The planetary gearing and mechanical load

brake are mounted in oil tight housings. The hoist gearing is assembled in the hoist drum.

This design produces an unusual compact, rugged and accessible hoist readily adapted to various installations and types of control.

for Details & Catalog, write

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HOISTS

SERIES H

# REELITES

help you "Hoist" profits on monorail operations

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- Feeds and Retrieves power cord in any direction (335° swivel) to double track coverage.
- Enclosed copper graphite and collector rings eliminate dangers of exposed collectors, trolleys, etc.
- · Neoprene covered cables seal out moisture, oil, chemical fumes.
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- · A heavy duty hoist reel . . . Rating: 10 or 15 amp., 550 v., AC: 250 v., DC: 2, 3, or 4 cond.—16 and 14 gauge wire.

You can take a long step towards automation in your plant by installing any number of APPLETON "YS" Series Reclites to expedite materials handling via monorail systems. These quality Reelites are backed by APPLETON'S years of experience in the field and offer you all the benefits of rugged construction and low-maintenance dependability. Write for complete information today . . . there is a style and model APPLETON "YS" Series REELITE for every application in your plant.

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AN EXCLUSIVE AMERICAN FEATURE They will protect your stock against damage, and will speed and simplify your inventory taking. The "American" way gives you more storage rack value for your storage dollar. Make us prove this fact. Distributors from coast to coast. Write us today.



It's American all the way

# OUTDOOR OR INDO

American Storage Racks make good warehousekeeping easy













There's an AMERICAN STORAGE RACK for every storage need















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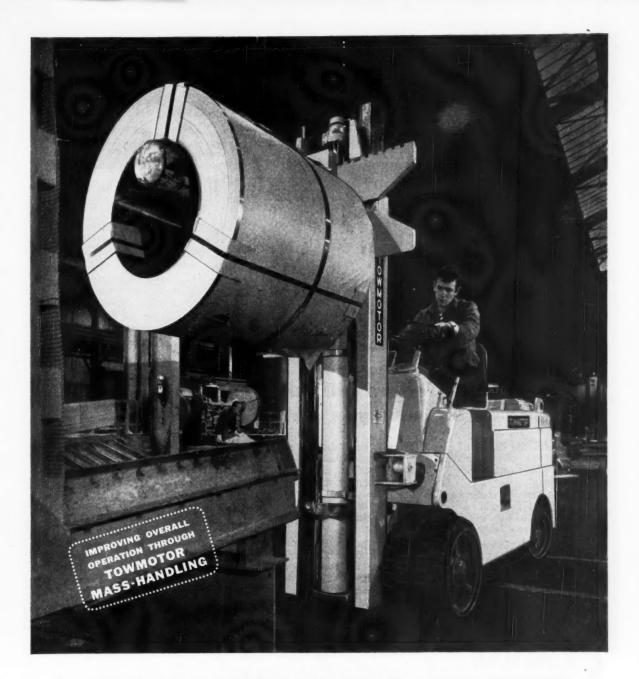
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(Tube Reducing Corp.-Wallington, N. J.) Manufacturers of quality products for automobiles, trucks, aircraft, offices, factories, warehouses, and homes.

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### ...here's "manpower" that hands you a bonus!

Think how many of your plant's handling jobs can be accomplished with much less effort—swiftly and profitably—by one operator "teamed up" with a powerful Towmotor fork lift truck!

You get an entirely new concept of modern mass-handling. You get a "bonus" in extra profits because you multiply manpower with the payroll you have. And you get a bonus in plant-wide morale when work flows on-schedule through every department . . . effortlessly . . . with a bigger day's work done.

Called the "ideal" fork lift truck by management and operators alike, the latest Towmotor models offer exclusive features as advanced as these, at no extra cost:

- · New-concept functional engineering
- · Simplified dual-entry compartment
- · Full-traction weight distribution

• Adjustable off-center visibility

· New motion-studied centralized control

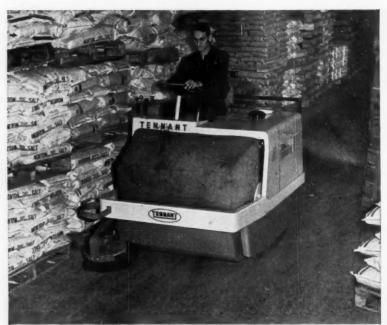
•Towmotor improved precision steering Power steering, 'TowmoTorque' Drive at extra cost These and 60 other points of superiority are described in Towmotor booklet SP-23 for comparison. Get a copy from Towmotor Corporation, Cleveland 10, Ohio.

Leaders for 38 years in building Fork Lift Trucks and Tractors





Gerlinger Carrier Co., Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland, Ohio Circle No. 162 on Reader Service Card for more information



"Aisle-designed" Tennant "80" works efficiently; sweeps aisles up to 8 1/2 wide in one round trip

# How many dollars will this TENNANT "80" save you daily?

In a medium-size Cleveland plant, the "80" Power Sweeper saved \$21 a day in labor costs alone. *That's* \$5,460 yearly!

The exact saving you can expect in your plant depends on factors such as area to be swept, obstructions, and present labor costs.

Time studies show the Tennant "80" replaces 3 to 15 men with push-brooms. It can sweep over 100,000 sq. ft. an hour in open areas. Under typical conditions, it's not unusual for the "80" to pay for itself in a year's time.

Provides clean, dust-free pickup. With its powerful brush-and-vacuum system, the "80" picks up litter that would be missed with hand sweeping. It easily lifts dirt from cracks; handles heavy, bulky debris as easily as light material. Sweeps 42" to 53" path.

Starts, stops, reverses instantly without shifting gears. Dirt hopper holds up to 800 lbs. Dumps hydraulically.

Would you like an estimate of the savings your plant may make . . . based on a personal survey of your needs? Write today. You'll be under no obligation.



Industry's Most Widely Used

#### **POWER SWEEPERS**

G. H. TENNANT COMPANY, 707 N. Lilac Drive, Minneapolis 22, Minnesota







LP gas-powered Model 50 Sweeper Gasoline-powered Model 50 Sweepe

Madel 36 Electric Sweeper

#### SPECIALIZED MAINTENANCE EQUIPMENT

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### LETTERS

TO THE



#### Do You Have This Problem?

To FLOW:

We carry a considerable stock of wire and cable on reels. Under our present system of taking inventory we dereel each spool and reel of wire and cable (on machine) to count the number of feet. This results in a costly inventory and we are looking for a more economical method; one that could possibly eliminate the dereeling.

What we have in mind is using interlocking charts; when, by plotting the diameter of material on the reel, the height of the reel and diameter of the material we should be able to read in feet the quantity of wire or cable at the point where the wires intersect.

I'm sure you are familiar with these computing charts. Would you please inform us where they can be obtained.

> A. Keeney, Jr. Radio Corporation of America Camden, New Jersey

While we can't recall seeing any charts for computing the length of wire or cable wound on reels, there is a standard formula that gives a close estimate. A handbook containing that formula has been sent to Reader Keeney.

#### Concerned Over Docks

To FLOW:

Have read your article entitled Highlights of the Month. June issue.

This aritcle is very interesting to me because for the last three years, I have been thinking very much about this same situation.

Have some ideas along this line which I believe, would save industrial plants both large and small as well as transportation



### **REVOLVING PAPER ROLL GRAB**

# Your Lift Truck Will Do This Job, Too!

### **Cuts Handling** Costs for Weyerhaeuser

The Pulp Division, Weyerhaeuser Timber Company, Longview, Washington, reports it is extremely pleased with Cascade's new Revolving Paper Roll Grab. Cascade Roll Grabs offer real savings in man hours and actual dollars because of these advantages:

AUTOMATIC ADJUSTMENT FOR DIFFERENT ROLL SIZES - Drivers no longer dismount and position grab arm manually.

IMPROVED OPERATING EFFICIENCY Rugged construction reduces down-time due to clamp failure.

SURE, NON-SLIP HANDLING OF HEAVY, HIGH-FINISH ROLLS - No more culled stock due to dropping. Costly reprocessing is eliminated. Wrapper damage is rare.

**FAST OPERATION IN COMPLETE SAFETY** Driver confidence with the Cascade Roll Grab results in more rolls and more tons of paper handled per day.

Cascade's powerful rotator quickly and safely revolves rolls weighing up to 6,500 lbs. Pilot-operated check valves ore steady clamping pressure until



Driver confidence in Cascade Grabs pays dividends in lower handling costs.



Cascade's high torque permits off-center clamping and rotating of this 6,000 lb. roll for higher stacking.



Made in 3 models: 2000 lb., 4000 lb., 6500 lb. Roll Capacities

#### ONLY THE CASCADE REVOLVING PAPER ROLL GRAB CAN GIVE YOU ALL THESE ADVANTAGES

- Highest Torque of Any Clamp Available.
- Speed of Rotation Precisely Controlled by Adjustable Hydraulic Fittings.
- Positive Clamping Pressure Insured by Pilot-operated Check Valves.
- No Manual Adjustment Required with Original Powered Swinging Arm.
- Rugged Construction, Replacement Parts Quickly Available, Easy to Service.
- Engineered to Adapt to Any Lift Truck.

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Revolvator Co.
Towmotor Corp.
Transitier Truck Co.
Yale & Towne Mfg. Co.

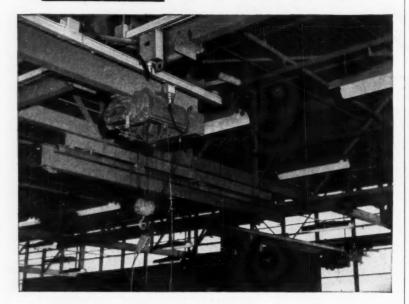
Mftrs. of a complete line of Hydraulically Actuated Lift Truck Attachments

#### CASCADE MANUFACTURING CO.

P. O. BOX 7587 . PORTLAND 20, OREGON

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### ...why your cranes and hoists should be FEEDRAIL® powered



Throughout industry, flexible Feedrail systems, in capacities from 60 to 500 amperes, provide convenient movable wer sources for:

- · Cranes and Hoists
- · Production Lines
- . Conveyor Assembly Lines
- . Moving Test Lines · Portable Tools
- · Machine Tools
- Cutting and Sewing Rooms
- . Lighting
- Motor Control

- 1. Safe electrification. Feedrail conductors are protectively enclosed in steel - no exposed wiring, no trailing cables. You enjoy maximum protection for personnel and equipment.
- 2. Minimum maintenance. Elimination of frayed, sagging, broken wires means safer, less frequent maintenance.
- 3. Better materials handling. There are no time consuming traffic holdups with Feedrail. Fewer accidents, less maintenance mean absolutely minimum down time-more efficient materials handling.
- 4. Lower operating costs. Elimination of hazardous, wasteful working conditions not only leads to better performance but improves safety records and plant morale as well - eventually lowers insurance costs too.

A Feedrail "moving power system" will fit your crane or hoist's needs - can be installed quickly and easily. Get full information. Write today to Dept. F-11.

SOLD BY MORE THAN 1,000 ELECTRICAL DISTRIBUTORS FROM COAST TO COAST



Never Becomes Obsolete

Subsidiary of Russell & Stoll Company, Inc. 125 BARCLAY STREET . NEW YORK 7, N. Y.

REPRESENTATIVES IN PRINCIPAL Circle No. 59 on Reader Service Card for more information

Continued

companies, many thousands of dollars per year. It would change the loading and unloading methods considerably.

But as you say, it will require cooperation and coordination of all concerned. For this reason it has been difficult to decide where one should start in order to get something done. Probably the truck trailer manufacturer would be the best place to start as new trailers should be so designed to fit into the picture, although trailers which are in operation at the present time can also be adapted to do the job.

M. P. Swearingen Oldham Materials Handling Co. Fort Wayne, Ind.

Reader Swearingen refers to the Editor's column in June, which discussed the lack of planned handling techniques in dock operations of plants throughout the country.

#### Wants FLOW For Students

To FLOW:

I am currently teaching a course in Material Handling at OMI in Cincinnati, the students of the course being men from industry whose jobs have some connection with the handling of materials. As such I would like to obtain for them a subscription to FLOW magazine.

Lewis K. Johnstone The Champion Paper and Fibre Co

Hamilton, Ohio

Names of the students have been added to Flow's Circulation list.

#### Finds Directory Unfailing Aid To FLOW:

We are using a copy of your "FLOW Directory" rather ex-

tensively for information concerning manufacturers of various products and find it to be an unfailing aid in securing such in-

# Cut "DEAD MILEAGE" off every truck!



Driver gets instructions for next pickup while he's finishing last one ... not a second wasted.

In hundreds of plants, warehouses, yards and depots, Motorola 2-way radio has paid for itself in a few short months, by increasing output per truck and cutting costs a dozen ways. A Motorola Communications Engineer will show you, in dollars and cents, how Motorola 2-way radio will actually save you money, year after year. And he'll show you how Motorola can help do the job better... why Motorola, the pioneer and leader, furnishes more 2-way radio than all others combined. Get the facts—write, phone, or wire—NOW.

#### Check all these Motorola 2-way radio benefits

- A Really SMOOTH flow pattern...each truck taking the next closest job, with no backtracking ... "dead mileage" cut to a minimum.
- More Completed Jobs per hour per truck...a substantial saving in routine materials handling costs.
- Three trucks do the work of four...you get greater work output without additional truck investment.
- Organized control, through more productive space management—live storage instead of dead storage.
- Greatly expanded handling capacity for peak load periods.
- Lower truck operating costs . . . fuel . . . mainte-



Dispatcher gets a rush request—radios it to truck nearest job ... time and needless travel saved.

### MOTOROLA

2-WAY RADIO

MOTOROLA COMMUNICATIONS & ELECTRONICS, INC. A SUBSIDIARY OF MOTOROLA, INC. 4501 AUGUSTA BOULEVARE • CHYSAGU ST. ILLINGIS



Motorola consistently supplies more mobile and portable radio than all others combined.

Proof of acceptance, experience and quality.

The only COMPLETE radio communications service—
specialized engineering...product...customer
service...parts...installation...
maintenance...finance...lease.

"The best costs you less—specify Motorola."

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Continued



# he'll never buy that brand of Beer again —



So far he's broken four fingernails, scratched himself twice, ruined his penknife, run a staple through his thumb, and he still hasn't reached the beer. I'll bet he wouldn't buy that brand again if they enclosed 15 shares of brewery stock in each carton.

That's why more and more companies are finding that it builds sales to use GLAS-SERT Gummed Tape to close cartons. GLAS-SERT provides a dust proof, economical closure that is speedily applied and easily opened by the customer. It also effects substantial saving through re-use of cartons.

#### FOR ADDED STRENGTH AND PROTECTION

- GLAS-SERT is reinforced in both directions with Rayon and Fibre-glass strands.
- Because 2 strips will do the job, Rexford's GLAS-SERT is especially suitable for high speed automatic taping machines and saves you twothirds the time when your carton is sealed by hand. So, whatever closing method you employ . . . hand sealing or automatic taping machines . . . seal all your cartons with Rexford's GLAS-SERT.
- Protective packaging with Polyethylene keeps GLAS-SERT "factory-fresh" . . . always ready to use . . . to the last roll in the box!



# Rexford PAPER COMPANY MILWAUKEE 9, WISCONSIN Branch Offices: NEW YORK, N.Y. • CHICAGO, ILL. COLUMBUS, OHIO • PHILADELPHIA, PA., • FT. SMITH, ARK. • ATLANTA, GA.

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formation. The issue we are using is titled 1954-1955, and we are interested in determining if this is the latest copy. If this is not the latest issue, please advise us of the method we should use in securing a new copy.

J. Frank Annas General Electric Company Distribution Transformer Department Hickory, North Carolina

The latest FLOW Directory now available is the 1956-57 edition. The next edition, for 1958-59, is now being compiled and will be available early in 1958.

#### Reprints Available to Readers

To FLOW:

Please send me reprints or tear sheets of the two articles "Behavior of Bulk" appearing in the October and November 1954 issues of FLOW.

C. E. Owen Muncie Malleable Foundry Co. Muncie, Indiana

To FLOW:

In your September, 1956 issue you printed an article entitled "The Caster Industry Approves First Industrial Caster Standard".

We were interested in the publication when it came in and passed it around our organization. Somehow or other we have misplaced it. It would mean a great deal if we could have two reprints of this article.

Stanley E. Morris Co. Los Angeles, California

To FLOW:

Would you please advise us if you have any reprints of past issues of FLOW available concerning the use and selection of casters.

> C. R. Stocker Amerotron Corporation Aberdeen, North Carolina



#### A single truck with dual performance

Now for the first time, a single truck meets any terrain condition. On paved surfaces, the *Clarklift* CY 40, with *single standard tires*, is fast and maneuverable. Now change to *dual wide-profile tires*. This *same* truck now operates over mud or rough terrain with powerful traction, high stability and flotation.

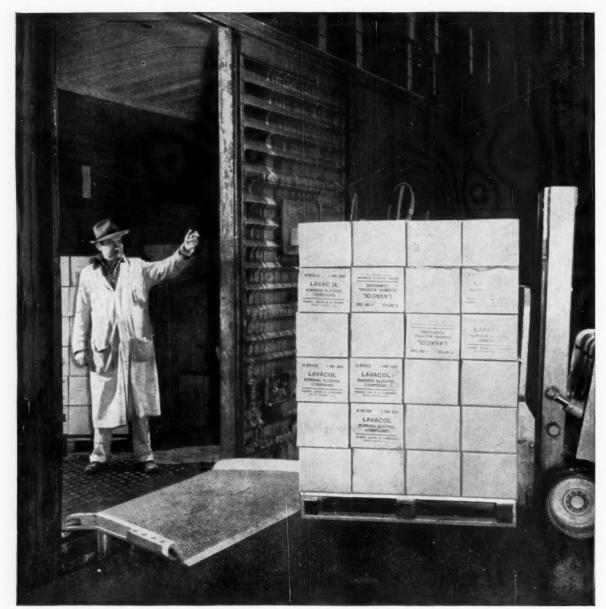
As standard equipment, there's fingertip-control power shifting, and a creeper range for rough ground and steep grades. Power steering insures matchless handling ease. Even weight distribution means positive traction and gradeability.

This new 4000-lb *Clarklift* sets a new pace, regardless of conditions. Try a demonstration on your own property. Your Clark dealer will arrange it. He's listed in the Yellow Pages.

Industrial Truck Division Clark Equipment Company Battle Creek, Michigan

CLARKLIFT is a trademark of Clark Equipment Company





Two PARKE, DAVIS employees can easily handle this light, strong magnesium dockboard.

### Parke, Davis moves products over lightweight magnesium dockboards

Materials handling problems vary considerably at Parke, Davis & Company, major pharmaceuticals manufacturer. They're handling fragile 6-ounce bottles one day and ponderous processing equipment the next. But all these shipments have one thing in common, they are moved rapidly and safely over magnesium dockboards.

Parke, Davis employees like magnesium dockboards because they're lightweight and easy to lift, carry and position. They are used on both their rail dock and truck docks. (One board is fourteen years old and still in everyday service!) In the picture above, a lift truck weighing over three tons is about to move across a magnesium dockboard.

For lightweight magnesium materials handling equipment—dockboards, loading ramps, hand and platform trucks—contact your nearest supplier. For information about magnesium, contact the nearest Dow sales office or write to the downward company, Midland, Michigan, Department MA 1410S-2.

YOU CAN DEPEND ON .





#### Like having four trucks instead of one

There are four combinations of same-size drive and steer tires that make this *Clarklift* CY 40 the most versatile truck you can buy. Think of it—it's like having four trucks instead of one. Each set of tires fits a different job.

Dual wide-profile tires (shown above) at 30 pounds pressure give extra traction. Single wide-profile tires apply when overall machine width is limited. Dual standard and single standard tires apply on firmer surfaces,

Each tire combination mounts without machine modifications, thus change-outs are readily made according to the job. Clark alone offers the new high flotation wide-profile tires as standard equipment. Ask your Clark dealer about them and the new Clark-lift CY 40, the truck that's

really four trucks in one.

Industrial Truck Division Clark Equipment Company Battle Creek 13, Michigan Clarklift is a trademark of Clark Equipment Company CLARK' EQUIPMENT

Circle No. 31 on Reader Service Card for more information

# Spring Maker Saves 75% of Storage Space with





COMPARISON PHOTOS show how 75% saving infloor space is achieved. At left is the Mather operation before Republic Bar Carriers. Materials were difficult to reach and handle. Inventory control expensive and difficult. Photo above shows neat rows of Republic Bar Carriers. The same amount of material is stacked in one-fourth the space. Length, width and height of carriers can be designed to meet your requirements for handling materials characterized by narrow dimensions.

# REPUBLIC



World's Widest Range of Standard Steels

# Republic Bar Carriers

# GAINS AREA FOR PRODUCTION EQUIPMENT; IMPROVES INVENTORY CONTROL

When a manufacturer is able to reduce storage space requirements by 75%, there is sure to be an interesting story behind it. This one is still unfolding at the Toledo, Ohio, plant of Mather Spring Company, nationally known manufacturer of automotive springs and torsion bars.

Mather was faced with two major problems: (1) Lack of storage space for "in process" springs and materials; (2) Necessity for actually gaining floor space as production increases, to permit installation of new additional equipment.

Republic Materials Handling Engineers were contacted and in cooperation with Mather engineers made a thorough study of material flow, handling, and storage procedure. This study resulted in the design and fabrication by Republic's Pressed Steel Division of a modified version of the standard Republic P-135 Bar Carrier.

Equipped with tiering lugs and channel runners designed for four-way entry by fork-lift truck, the carriers are replacing a four-wheeled unit that Mather has been using. These older units cannot be tiered and consume valuable floor space. Frequent and expensive handling is required to reach desired material. Inventory control has been difficult.

Installation of Republic Bar Carriers has resulted in a 75% saving in floor space, according to Mather engineers. The space gained will be used for installation of new production equipment. And with materials tiered in neat, orderly rows, Mather is able to maintain a close and accurate check on inventory.

Mather will also enjoy future savings, in reduced handling and maintenance costs. Corrugated-steel construction of the bar carriers provides strength, assures long service life at lowest per-year-cost.

Need more space in your operation? A standard unit from Republic's broad line of materials handling equipment may provide the answer. Or you may require the design of a completely new unit. Either way, our engineers will help you. Contact your Republic materials handling representative. Or send us the coupon. There's no obligation.

# STEEL

and Steel Products



IMPROVE HANDLING, STACKING AND PALLETIZING of bulky, uneven, odd-lot and fragile materials with Republic Steel Pallets and adjustable Pallet Racks. Tubular steel supports on racks adjust every six inches to handle palletized material of any height. Two-way entry permits loading and unloading from either side. Select single pallets from any level without restacking. Mail coupon for specifications and quotations.



GAIN STRENGTH AND SPACE for storing of heavy dies, tools, parts, etc., with Republic Wedge-Lock Steel Shelving. It provides maximum loading in minimum floor space. Wedge-Lock Steel Shelving is specifically designed for high stacking of enormous weights. Joints get tighter and stronger as more weight is applied. Yet it is completely flexible to meet changing space requirements. Wedge-Lock Steel Shelving, a product of Republic's Berger Division, assembles quickly and easily. The coupon will bring you more facts.

3196 EAST 45TH STREET	CLEVELAND 27, OHIO
☐ Have a Materials Handli	
□ Pallet Racks	
Name	☐ Wedge-Lock Steel Shelving
□ Pallet Racks Name	☐ Wedge-Lock Steel Shelving  ——Title——

### Stacking Problem? call EMI



"well stacked" or shipped on EMI racks

Big or little, strong or fragile, anything stacks or ships better on EMI quality racks. They protect stock, cut handling costs and speed inventory.

EMI RACKS are made of strong, tubular steel and are adjustable to fit any space or unit load. Special racks designed to your specifications with field engineering service on any installation.

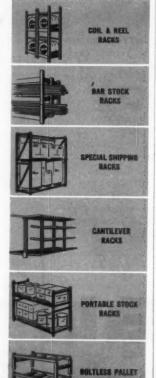
Write for our illustrated catalog before you plan additional storage space or the purchase of stacking or shipping equipment.

Well Stacked Racks for Industry

# EQUIPMENT

21550 HOOVER ROAD

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### CALENDAR OF EVENTS

#### November 4-7

National Retail Lumber
Dealers Association
Building Products Exposition
Philadelphia, Pennsylvania

#### November 6-8

Packaging Association of Canada Canadian National Packaging Exposition Toronto, Canada

#### December 3

Electric Overhead Crane Institute Annual Meeting Statler Hotel Washington, D. C.

#### January 27-30

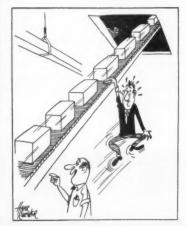
Plant Maintenance & Engineering Conference International Amphitheatre Chicago, Ill.

#### May 1-8

American Society of Tool Engineers Tool Show Convention Center Philadelphia, Pa.

#### May 8-10

American Material Handling Society The Western Material Handling Show Great Western Exhibit Center Los Angeles, Calif.



FEEL THAT RUBBER BELT! THOSE RIDGES GET A DEATH-LIKE GRIP ON THE BOXES.

Brainard SOLVE THE BUYING

OHIO

GEORGIA

MAINE

Strapping Warehouses

Nationwide

DAKOTA

NEBRASKA

KANSAS

TEXAS

Brainard's strapping warehouses strategically placed throughout the United States insure quick delivery of tensional and heavy duty strapping as well as tools and other strapping supplies.

ILLINOIS

MISSOUR

ARKANSAS

For this reason, small to medium sized industries that buy in relatively small quantities have found that Brainard's service and delivery are topped only by the quality of their product.

Brainard Steel Strapping

Brainard Steel Division, Sharon Steel Corporation Griswold Street, Warren, Ohio Circle No. 23 on Reader Service Card for more information SHARONSTEEL

OREGON

445

NOW..

WHEELS

ACL 20156

CAPACITIES: 15,000 TO 20,000 LBS.

# YALE G-3 GAS TRUCKS

with fully automatic transmission

# **GIVE INSTANT POWER**

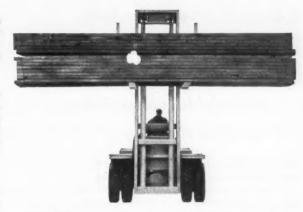
for smooth, fast-cycle handling of loads up to 20,000 lbs. under all operating conditions

AUTOMATIC POWER CONTROL. These Yale trucks supply power the instant it's needed...for fast starts or climbing grades...for accurate inching while capacity loads are lifted at speeds up to 60 feet a minute. Loads are spotted fast!

FAST-CYCLE OPERATION. Power steering, power brakes, separate inching control, small turning radius plus automatic transmission make maneuvering easier than ever. No more clutching or shifting of gears - the driver moves his truck in and out of tight areas fast! Travel speeds up to 20 miles per hour. Result: More trips per hour-more volume per day-a less tired operator.

GREATER STABILITY. No sudden shocks or jerksautomatic transmission delivers right amount of power for smooth starts and travel. Lowering is fast and controlled. Low center of gravity, broad lifting base, sidethrust rollers keep loads steady at all points of lift. H-beam side members in frame for extra strength. Anti-cavitation valve in tilt cylinders adds to channel stability. Large, high-flotation pneumatic tires give good traction for smooth ride up ramps and over rough terrain.

Yale G-3 Series High-Capacity Gas and LP-Gas Trucks are also available with Fluid Coupling or standard transmission. All models are designed for attachments-engineered for minimum loss distance.



#### **EXCLUSIVE YALE "WIDE-ANGLE VISION"**

The Yale G-3 Series Gas Truck gives the operator 300% more visibility than any other truck of its type! Channels are wide-spaced, nested to reduce frontal obstruction. Hoisting cylinders next to channels, out of line of sight. Wide channel spacing and open carriage design give maximum straight-ahead visibility plus the widest possible arc of vision at all levels of fork lift. Forward and to the rear, the driver has full visibility to speed big-load handling with complete safety.

# YALE\*

#### INDUSTRIAL LIFT TRUCKS AND HOISTS

The Yale & Towne Mfg. Co., Yale Materials Handling Division Manufacturing Plants: Philadelphia, Pa.; San Leandro, Calif.

Gasoline, Electric, Diesel & LP-Gas Industrial Lift Trucks Worksavers • Warehousers • Hand Trucks • Hand & Electric Hoists

Dept. A-411, Roos	evelt Blvd., Philadelphia 15, Pa.
Please send me br Yale High-Capaci	ochure No. 5230A about the new ity Gas Trucks.
Name	Title
Company	
Address	
City	Zone_State_

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# DIAMOND ROLLER CHAINS CONVEYOR CHAINS AND SPROCKETS

give you
dependable, economical
Materials Handling

- Pre-Loaded (minimizes adjustments)
- Shot-Peened (pins, rollers, bushings and link plates). High fatigue resistance.
- New Ball-Drifted Pitch Hole Preparation.
   High holding power of pin and bushing in link plates.
- Induction Hardened Sprocket Teeth (hardness for wear, toughness for strength)

Materials handling today requires power... power to hoist, lift, convey and drive. Wherever there is power to transmit, you'll find Diamond Roller Chains and Sprockets.

Diamond is dependable, as positive as gears—as flexible as belts, light weight and small in size compared to its great strength. It will drive from either side, is effective at low speeds and high. It gives machinery designers and builders new freedom in shaft location.

If you have a materials handling problem, consider Diamond Roller Chains, Conveyor Chains and Sprockets. Diamond Engineering service is ready to help you. Call or write now.

#### DIAMOND CHAIN COMPANY, Inc.

A Subsidiary of American Steel Foundries

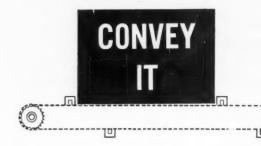
Dept. 624, 402 Kentucky Ave., Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

Please refer to the classified section of your local telephone
directory under the heading CHAINS or CHAINS ROLLER.



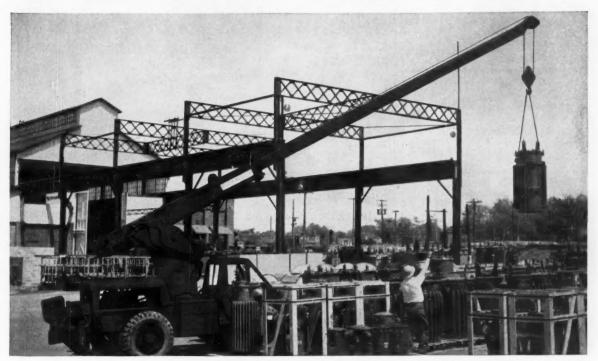
ROLLER





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### AUSTIN-WESTERN HYDRAULIC CRANE



A-W's precise hydraulic controls allow operator to move loads with slow, continuous motion, avoiding sudden shocks that might damage delicate internal structure of equipment like this transformer.

#### PENNSYLVANIA POWER & LIGHT REPORTS: A-W crane produces dramatic savings in time, space and money



Crane's 35-ft. reach makes short work of placing poles on storage racks.

At the Pennsylvania Power & Light Company's System Storeroom in Hazleton, Pa., the A-W hydraulic crane gets many important jobs. It is used in the yard to unload poles and crossarms from incoming freight cars, to load poles on "dinky" trailers, to unload transformers, place them in storage and remove them for service, and to handle reels weighing as much as 3000 pounds. And busy as it is in the yard, it is equally useful in the shops.

Fast pole handling. Using the crane's 35-ft. boom, poles are unloaded singly and placed in racks at the rate of one pole every two or three minutes. In two or three hours the crane, with operator and two helpers, can completely unload and position the poles from a fully-loaded freight car. This same job used to take four men a full day.

Further savings in pole handling are realized when poles are loaded on "dinky" trailers for installation. Old method utilized winch and derrick on line crew's truck, usually required four men, two of them from highly paid line crew. Now the crane operator and one helper can load a pole in about 15 minutes. When the line crew calls for the trailer it is ready to roll.

Cutting costs on crossarms. Under old system, crossarms were delivered in bulk, and four men needed a day to unload a single carload. Now they are delivered in bundles of 24 to 48 and

unloaded by the A-W crane fitted with a loop sling. Using this method, three men can unload the same quantity in three hours, a spectacular reductionfrom 32 to 9 man-hours! In addition, the new method eliminates the hazard of creosote burns, which had been a serious problem.

Fill out and mail the coupon today for the full story on how the A-W crane is cutting costs and speeding the flow of hard-to-handle materials at Pennsylvania Power & Light.

AUSTIN-WESTERN 620 Farnsworth Avenue, Aurora, Illinois Please send the complete report on the A-W hydraulic crane at Pennsylvania Power & Light. Tiele

Power Graders • Motor Sweepers • Road Rollers • Hydraulic Cranes



#### AUSTIN-WESTERN BALDWIN-LIMA-HAMILTON

Construction Equipment Division
OTHER DIVISIONS: Eddystone • Lima • Electronics & Instrumentation • Hamilton • Lowy-Hydropress • Standard Steel Works
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AURORA, ILLINOIS, U.S.A.

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# dares you to damage it.

This is no ordinary hopper. It's a Roura hopper. And Roura makes 'em rugged. It takes on the toughest assignments . . . day in and day out . . . and comes back for more. Even the crash-bang handling of careless lift truck operators doesn't bother a Roura for it's built of extra heavy metal . . . welded with care . . . braced and double-braced . . . for years of trouble-free service.

Your Roura Self-Dumping Hopper will cut hand-unloading costs at least 50% . . . pay for itself before you know it. Available in sizes from 1/2 to 2 cubic yards for use with fork or platform lift trucks, mounted on live skids or with malleable or rubber tired casters.

HERE'S HOW to get more details about Rouro ping Hoppers. Just attach this coupon to rhead...sign your name...and mail to...

ROURA IRON WORKS, INC. 1411 Woodland Ave., Detroit 11, Michigan

He's lifting with 1 finger Speed Handling...

#### Increase Storage Capacity with a C-F Lifter

Here's 1 man-a C-F Lifter and an electric hoist handling 5 ton packs of sheet steel with speed, safety and economy. One C-F Lifter handles a wide range of sizes . . . adjustments are made

by the operator in a few seconds, permitting the Lifter to shift from wide to narrow sizes in a few seconds. Made in capacities from 2 to 60 tons.

Bulletin SL-28 shows you how to cut handling costs. Write for it today.



#### CULLEN-FRIESTEDT CO

1307 South Kilbourn Avenue . Chicago 23, Illinois



TOUCH and GO!

Two versatile, power-propelled Walkie-Worklifters handle a variety of transporting and stacking chores at the Minneapolis-Honeywell plant in Morton Grove, Ill.

#### TYPICAL USER EXPERIENCES

"...has serviced us well, savings all along the line; time, manpower, etc." Frank Gil-christ, Cullen Company, Chicago.

"... loading drums on to freight cars saves us a half day for each car for two men and a truck." Paul Angell, Pres., Newly Weds Baking Co., Chicago.

"We are very pleased with our Walkie-Worklifter . . . a big help in material hand-ling in eur warehouse." Henry Solomon, Lion Knitting Mills Ce., Cleveland

Write for current Lift Truck bulletin or refer to your Sweet's Engineering File 1A-EC. Our local representative will be glad to discuss this unique truck with you at your convenience.

#### CONOMY

Modern Materials Handling

Up and away-quickly, safely-even on lightly rated floors and elevators, and in narrow aisles!

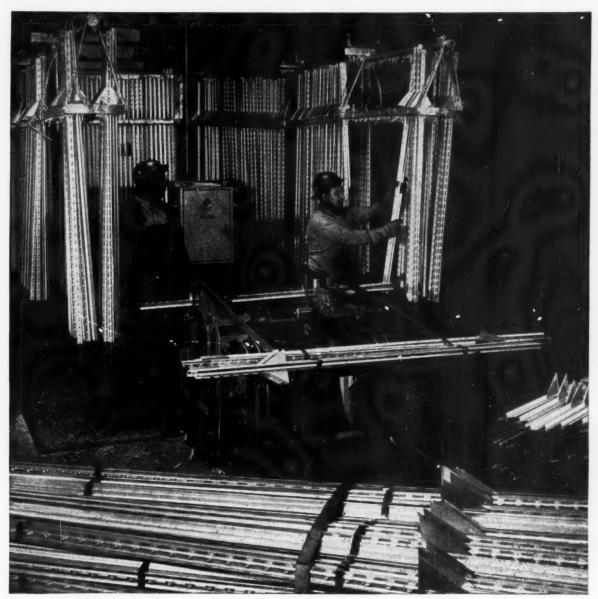
Compact Walkie-Worklifters are ideally suited to touch and go transporting-stacking jobs because of their ease of operation, light weight and ruggedness.

For example, Walkies may be kept busy stacking unit loads in narrow aisles, storing parts and finished products, loading and unloading trucks; and, for stock pick-ing to fill small orders, the Walkie may be used as a convenient mobile elevator, to carry the operator up to high shelves and

Capacities range from 1,000 lbs. to 2,000 lbs., lifting heights from 58" to 120". Most efficient travel range is within an area of 10,000 square feet. The price range is from \$1,000.00 to \$2,500.00 complete, including battery and charger. You can use several Walkies at these low prices.

INGUNIELERING 4524 W. Lake St., Chicago 24, III.

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#### Power does the hustling

These Signode power strapping machines put two straps around a bundle of steel fence posts in four seconds, complete. Then 50 or so small bundles are stacked and hand-strapped to make a big 4000-pound bundle. Over-all strapping time is four times faster than the former tying method. Bundles are tighter, neater—stay tight to destination. Total cost of all the steel strapping in each big bundle is only about a dollar—the whole package material cost! You can't beat the speed, strength and low cost of Signode steel strapping for tying things together. To make your product cost less to handle, store, ship and receive, see your Signode man, or write:



#### SIGNODE STEEL STRAPPING CO.

2618 N. Western Avenue, Chicago 47, Illinois

Offices Coast to Coast. Foreign Subsidiaries and Distributors World-Wide In Canada: Canadian Steel Strapping Co., Ltd., Montreal \* Terente

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# **MAGLINER DOCK BOARDS**

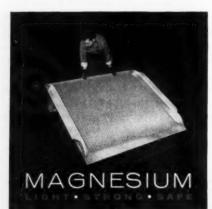
### Improve any dock operation

Loading Costs Too High? Chances are a difficult truck or rail dock problem is preventing smooth, efficient loading and unloading. Maybe your dock is too narrow, too congested . . . your men are hampered by the lack of proper space for loads and equipment. Or maybe your operation is slowed down by awkward height differences from

dock-to-carrier, curved tracks, loading from ground level, or any one of a great many freight handling conditions that build up costs. Whatever your dock problem—it can be easily solved with a Magliner magnesium dock board.

#### And here's why!

Magliners are engineered to meet the specific requirements of your dock and operating conditions. Made of magnesium for easy one-man handling, Magliners are light, strong and safe. They're easy to put down . . . easy to move. Men loads and equipment move fast, sure, safe—protected against accidents and costly damage. And Magliners can take it . . . give rugged, dependable service . . . safely handling loads up to 10 tons or more. Other advantages! Low initial cost . . . less maintenance—plus such Magliner features as Tire Saver side curbs and Triple Strength curb ends. For important on-the-dock savings coming or going get Magliners on the job!



riease sella lile lily copy	of "How to Cut Dock Loading Costs."
Check here	Permanent-Type Dock Boards
for information on:	☐ Mobile Loading Ramp
	Delivery Truck Ramp
	_
NAME	
NAMECOMPANYADDRESS	

MAGLINE INC., BOX 111, PINCONNING, MICHIGAN

Canadian Factory: Magline of Canada, Ltd., Renfrew, Ontario

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### Do You Have Any of These Dock Problems?



EQUIPMENT UNDER CLEARANCE PROBLEMS?
—or extreme dock-to-carrier height differences.
Magliner board and ramp combination solves high
truck—low dock problem. Longer stope for safer
loading. Prevents hang-up of low underclearance
equipment. Dock board can be used independently
of ramp.



NARROW CONGESTED DOCK? This narrow rail dock required a flared Magliner dock board, allowing power trucks to make sharp, right angle turns,



**GROUND LEVEL LOADING?** Check into a Magliner mobile loading ramp—a loading dock on wheels... where you want it... when you want it. One man moves it.

OUTLYING YARD CARS? No problem to load or unload directly from dock with Magling car-to-car dock boards. Eliminates car-spotting ded demurage costs.

PLANNING A NEW PLANT? Install Magliner Perma-Docks—the permanent magnesium dock board system. Low initial cost . . . economical installation . . . maintenance-free operation. Builtin dock loading efficiency—plus more usable dock space.

For more information

MAIL COUPON OR USE
READER SERVICE NO.



#### Material Handling Needs More Research

W ITH THE SPUTNIK spinning a thread of apprehension around us, it seems appropriate, again, to take a look at our current industrial needs and plan for those of the future.

Right now, we have nearly full employment—this along with the enjoyment of tremendous advances in mechanization made in almost all industries over the past few years. (These advances have helped to keep a reasonable level of productivity per worker.)

Right now, also, we're feeling a little more of the urgency for preparedness.

While little has been done to dim our hopes for a constantly improving standard of living, we're recognizing the tremendous demands that can be placed on us by an essential defense program. Maintenance of our comforts, alone, will call for constant efforts to increase mechanization. The addition of an all-out preparedness program would demand all the brains and experience we could possibly muster. If another great conflict should come, we would not be as fortunate as we were in the early forties, when there was manpower to provide the muscles to sustain military and civilian operations simultaneously. These are dire thoughts, to be sure, but let's be fully realistic and say some of the things many of us have been thinking.

Whatever job is to be done, material handling will be a major part of it. Do we have the equipment, data, experience, and manpower to handle all assignments? It seems we are strong on machinery, but there is a tremendous need for more research in material handling—for the accumulation of data, the development of functional formulas, and the standardization of equipment and procedures.

Some firms which use handling equipment and some which produce it have established fellowships and foundations that are producing valuable results. But these few firms can't do such a big job alone.

More extensive and intensive research is required in two general areas. One is within industries having identical needs—as in paper and printing trades where the handling, protection and shipping of unit loads of the same kind of material is a common problem. The other is the type that crosses boundaries of industries—as in bulk handling techniques which may apply in cement plants, bakeries and foundries.

Within industries there is at least one practical approach. It is through effective use of trade associations. Of course, large companies often make available to their fellow manufacturers the results of their research projects. But, while the smaller firm usually hasn't the resources or facilities for research, it may have knowledge and personnel that can make valuable contributions to an industry-wide research program.

As for problems that cross industry lines, here is where our technical societies can shine. They have members working in every conceivable kind of plant. They read and discuss situations that are often identical in plants which couldn't be farther apart as to methods of manufacturing, processing or end-product. They have a wealth of training and experience backed up by an economic need to develop the best information possible.

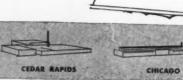
They should take the lead in establishing research projects that are badly needed now and may be essential tomorrow.

Ed Leighten Editor

AG

A Giant in









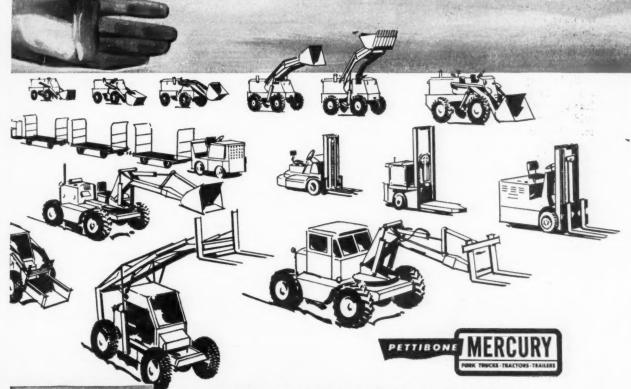


### American Industry...

# PETTIBONE

now offers the most complete line of materials handling equipment

With the addition of the MERCURY Line of industrial materials handling equipment . . . PETTIBONE now offers industry the broadest, most diversified line of products to meet all industrial handling requirements. Only a corporation with the tremendous resources of PETTIBONE could assemble this imposing array of equipment. Every PETTIBONE product is engineered to answer specific problems . . . faster, more efficiently and at lowest cost. Whatever your handling requirements, think first of PETTIBONE . . . an important name in industry since 1880.



THE MERCURY MANUFACTURING COMPANY
Subsidiary of Pettibone Mulliken Corporation
4154 SOUTH HALSTED STREET • CHICAGO 9, ILLINOIS

Circle No. 107 on Reader Service Card for more information



## CATALOGS

offered in

Flexible Barrier Wrap... Green Core Super Cloth Rap easily conforms to any product shape. It is waterproofed, greaseproofed and self-sealing. Lock seam joints are as grease resistant as the material itelf. The greaseproof film is on cloth backing and the sheet is coated on both sides with compounded, microcrystalline wax. Further information is available from Mid-States Gummed Paper Co.

Circle 110 on Reader Service Card

Drum Handling Attachment
... This Lift-O-Matic attachment
may be used with a fork truck
with the forks left on or removed.
It affords simple, automatic, mechanical handling of any size or
type of drum—single or multiple.
A catalog is offered you by Marvel
Industries, Inc.

Circle 102 on Reader Service Card

Self-Dumping Hoppers . . . are said to cut handling and unloading costs of wet or dry, hot or cold bulky materials 50% or more. Full details are contained in literature available from Roura Iron Works, Inc.

Circle 143 on Reader Service Card

How to Reduce Waste Disposal Costs... is the title of a booklet offered you by Dempster Brothers. It describes their method of containerizing waste when and where it originates by using clean, large capacity, Dempster-Dumpster Containers. One man and one truck using the Dempster-Dumpster can service over a hundred accumulation points, picking up, hauling and emptying containers on a planned shuttle schedule.

Circle 42 on Reader Service Card

Truck Index . . . describing over 600 combinations of sizes and capacities is offered you by Revolvator Co.

Circle 136 on Reader Service Card

Fingertip Controls on the Handle . . . of the Raymond Electric Pallet Truck assures easy maneuverability in close quarters and narrow aisles. The truck automatically reverses when the safety button on the handle touches the operator's body, so it's safe to use in tight spots. Has twice the voltage of conventional walkies to give extra power on ramps with full capacity loads. Comes complete with battery and charger. Further information is available in a Truck Bulletin published by The Raymond Corp.

Circle 133 on Reader Service Card

Complete Specifications and Free Cost Cutter... that shows how to chart and analyze your own handling needs is offered you by Automatic Transportation Co. It describes their electric truck, the Docker, which is said to be especially desirable where space is limited. It works with ease inside trailers and in aisles, with or without pallet racks, too narrow for other similar trucks.

Circle 187 on Reader Service Card

Aluminum Dock Boards...
the new Met-L-Ite flush type design is a new approach to railroad car loading and unloading.
Offer resistance to corrosion, durability, economy and longer life.
All materials and workmanship guaranteed one year. Information is available from Met-L-Ite Products Div., Voltz Brothers, Inc.

Circle 169 on Reader Service Card

Drop Bottom Containers
... These steel constructed drop
bottom containers can be used effectively to handle bulk materials
which, when unloaded normally
raise clouds of dust that might be
undesirable or injurious to men
and machines. These dust clouds
are eliminated by supporting the
container on its base, disengaging
the lock from the door and slowly
raising the container. Further information is contained in literature from The Youngstown Steel
Door Co.

Circle 186 on Reader Service Card

Flexible Conveyor Belting
... The Omniflex belt permits
travel around corners of conveyors. Features of the belt are its
short turning radius, light weight,
and easy installation and minimum maintenance. An illustrated
catalog is yours for the asking
from Ashworth Bros., Inc.

Circle 10 on Reader Service Card

Crane Scale . . . eliminates double handling. Loads can be checked on the spot as they are moved—the instant they are lifted. No need to pick up, move to a scale, set down and then pick up again. Illustrated literature is offered you by W. C. Dillon & Co., Inc.

Circle 44 on Reader Service Card

Three Nails a Second...To help you speed up the production of skids, shooks, panels, crates and pallets, the Auto-Nailer makes and drives its own nails in accurate lengths up to 2¾ inches. The nails stay put and they won't back out. Hurricane drive eliminates splitting. A catalog is offered you by Auto-Nailer Co.

Circle 13 on Reader Service Card



# and BULLETINS

#### advertisements in this publication

Strapping Machine . . . How a company uses Acme Steel's F3 Strapping Machine to compress, unitize and protect corrugated boxes for better handling, storage and shipment is shown. It successively compresses the unit and tensions, cuts and seals one, two or three straps simultaneously while the unit is still under compression. It is push-button controlled and applies each strap with uniform, pre-determined tension. Further information is available from Acme Steel Co., Acme Steel Products Div.

Circle 1 on Reader Service Card

Jib Crane Cuts Yard Handling Costs... One user of the LeTourneau Jib Crane, a utility company, reduced the time required for loading poles onto their line trucks from 15 minutes to two minutes. Full-revolving LeTourneau Jib Cranes, both manually and power-rotated, are available in capacities from 3 to 15 tons. They can handle rated loads anywhere on 25-ft. boom. Descriptive literature is yours for the asking from R. G. LeTourneau, Inc.

Circle 91 on Reader Service Card

Lace Belts as Wide as 12 Inches... in one operation with Clipper Hooks and Lacers. The lacers exert up to 45,000 lbs. pressure. The design of the hooks and the method of installation distribute strain evenly across the belt without injuring belt fibers or otherwise weakening the belt at the joint. Detailed product information and case history examples of Clipper machine-lacing benefits are contained in bulletin No. 157 which is offered you by Clipper Belt Lacer Co.

Circle 33 on Reader Service Card

New Speed and Mobility . . . for efficient performance on lifting, digging, loading, erecting and plant maintenance jobs can now be yours with the Bucyrus-Erie's new 11-B Transit Machine. Sliding, hinged and removable panels on the cab permit easy access to power plant and main machinery. The machine can be used as a crane, clamshell, dragline, hoe or shovel. Complete details are available from Bucyrus-Erie Co.

Circle 189 on Reader Service Card

Small Parts Storage . . . is afforded by the Bathey Sto-Bins which are available in five sizes. You can place up to 360 bins in three square feet of floor space. Full details and information are available from Bathey Mfg. Co.

Circle 15 on Reader Service Card

Tote Boxes and Baskets... manufactured by The Chas. Wm. Doepke Mfg. Co., Inc., are said to bring you small parts handling efficiency at low cost. Literature tells about the nesting-stacking feature, double hopper ends and twin movable handles which combine to produce a standard container for use throughout the plant.

Circle 45 on Reader Service Card

A Shelving Reference Manual . . . giving full information on their complete line of shelving is offered you by Deluxe Metal Furniture Co. Some of the features of the shelving are complete adjustability without tools, snapin dividers assure flexibility, coped shelf corners which increase storage capacity and factory-embedded shelf reinforcing to cut down installation time.

Circle 41 on Reader Service Card

Loading Without Docks . . . Ground level to truck height for loading operations can now be accomplished with a portable, hydraulically driven loading dock. One man is all that's required to move the dock into position. The hand or fork truck is then moved onto the platform from ground level and raised to the level of the truck bed by actuating a foot switch. The front end of the platform is then dropped onto the bed of the truck while the other end is raised to prevent accidentally driving off. Further information is available from Lodige Mfg.

Circle 197 on Reader Service Card

Reinforced Sealing Tape... Glas-Sert is reinforced in both directions with Rayon and Fiberglass strands. It is said to be especially suited for high speed automatic taping machines and saves two-thirds the time when cartons are sealed by hand. Further information is available from Rexford Paper Co.

Circle 137 on Reader Service Card

Custom Engineered Material Handling Equipment . . . special hangers and racks, industrial trailers, hoppers and bins, hand trucks, etc. are all described in literature available from Lansing Co.

Circle 90 on Reader Service Card

Portable Bag Closer... handles all types of bags. Requires no installation—just plug it to any outlet. Simple to operate and maintain and weighs only 10½ lbs. Details available from Dave Fischbein Co.

Circle 61 on Reader Service Card

Use This

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Service Card

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Sixty Tons per is the rate at which the High-Speed Model Quantity of the Hopper Car Unloaded bulk materials from to trucks or storage able in lengths of fraget and with either or electric motor. raised or lowered and material to full pitch trolled by sliding a gruther information from Baughman Mfg. Circle 16 on Reader

Storage Racks .
less of the items you shouse, American St will meet particular economically and mo They protect stock age and speed and sit tory taking. Erected ing or welding. Furt tion is available fro Metal Products Co., S. Div.

Circle 5 on Reader

L-P Gas Carbuntem . . . by Zenith advantages as elimin jectionable exhaust three to four times lo up to twice the numbetween major engin fewer tune-ups, fast and savings in fuel conformation is offere Carburetor Div., Bene Corp.

Circle 188 on Reader

Electric Persons
... has a 46- by 60 area and passenger three. Westcoaster E are also available for and warehouses, movieries, airports, etc. A available from West chinery, Inc. which giplete story.

Circle 174 on Reader

Tons per Hour . . . . te at which the Baughman and Model Q-51C Portable Car Unloader can transfer terials from railway cars so or storage bins. Availengths of from 35 to 50 with either gas engine ric motor. It is easily lowered and the flow of to full pitch screw is concept sliding gate controls. information is available aghman Mfg. Co., Inc.

ge Racks . . . Regarder items you store or ware-temerican Storage Racks at particular needs most cally and most efficiently, otect stock against damspeed and simplify invening. Erected without bolt-relding. Further informativaliable from American oducts Co., Storage Rack

on Reader Service Card

on Reader Service Card

Gas Carburetion Sysby Zenith offers such
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four times longer oil life,
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major engine overhauls,
me-ups, faster refueling
ngs in fuel costs. Further
ion is offered by Zenith
or Div., Bendix Aviation

8 on Reader Service Card

ric Personnel Carrier a 46- by 60 in. payload passenger capacity for estcoaster Electric Cars available for plants, docks houses, movie lots, refinports, etc. A brochure is from West Coast Malne. which gives the comve.

on Reader Service Card

Collapsible Pallet Boxes... come in three models—plain, open front and drop leaf. A complete line of all types for material handling. A bulletin giving further information is offered by the Bigelow-Garvey Lumber Co.

Circle 19 on Reader Service Card

Production Line Sealing...
of cartons with mechanical equipment can be accomplished through
the use of sealing tapes by American Sisalkraft Corp. Facts about
the labor saving uses of Sisalkraft
reinforced tape are contained in
literature offered by the company.
Circle 7 on Reader Service Card

Costs Less Per Year . . . is the claim made by Sterling Wheelbarrow Co. for their barrows. Construction is all steel, all welded with no rivets. Maintenance costs are practically nil. A catalog is available from the company which shows their complete line.

Circle 154 on Reader Service Card

End Damage from Shock
... The new Greer Damper can
be installed easily, quickly and at
low cost. It eliminates harmful
shock that damages cylinders,
hose, packings, and causes structural strain. Parts last longer and
perform better. Cuts downtime and
maintenance and reduces operating costs. Full information is contained in a bulletin published by
Greer Hydraulics, Inc.

Circle 196 on Reader Service Card

Eliminate Gas Fumes . . . OCM Catalytic Exhausts eliminate 95% or more of carbon monoxide and 90% of harmful, irritating hydrocarbons and other engine exhaust fumes and odors from any type of equipment burning gasoline or LP-Gas. Eliminates fume-caused headaches, grogginess, eye irritation and nausea to workers. Complete information is available from Oxy-Catalyst, Inc. Circle 120 on Reader Service Card

Closed Circuit Pneumatic Conveyor... conveys finest free flowing products without filters. Bulletin TV-553 offered by The Young Machinery Co. gives complete details and is yours just for the asking.

Circle 176 on Reader Service Card

Adjustable Storage Racks
. . . shipped ready for assembly
in a few minutes, without bolting
or welding. Can be used in any
size area. Built to any height for
use in single, double or multiple
sections. Shelves adjust to any
level. Further information is available from Palmer-Shile Co.

Circle 121 on Reader Service Card

Blue Book of Packaging
... is the title of a 36-page booklet listing the information on their
strapping line and is offered you
by Gerrard Steel Strapping Div.,
U. S. Steel Corp.

Circle 63 on Reader Service Card

Hydraulic Lift Truck . . . Bulletin No. LT 854 featuring Weld-Bilt lift trucks and skids for every material handling need is yours for the asking from West Bend Equipment Corp.

Circle 173 on Reader Service Card

Stacking Racks... made of strong, tubular steel—adjustable to fit any space or unit load. Special racks designed to your specifications with field engineering service on any installation. An illustrated catalog giving full information is offered by Equipment Mfg., Inc.

Circle 53 on Reader Service Card

One-Man Car Door Opener
... opens any box car door in
20 seconds or less with little effort.
Multiplies one man's strength a
hundred-fold. Details are available
from The Nolan Co.

Circle 116 on Reader Service Card



World's Most Versatile Paper Roll Clamp . . . is the claim made by Cascade Mfg. Co. for their paper roll clamps which can make horizontal pickups of rolls from 10 to 60 inches in diameter. Pilot-operated check valves insure steady clamping pressure until operator releases load. The powerful rotator quickly and safely revolves rolls weighing up to 6500 lbs. Illustrated literature is available from Cascade.

Circle 28 on Reader Service Card

Sheet Lifter . . . permits one man and an electrical hoist to handle five tons of sheet steel with speed, safety and economy. Adjustments permit the lifter to shift from wide to narrow sizes in a few seconds. Capacities from 2 to 60 tons. A bulletin giving full information is offered you by Culler-Friestedt Co.

Circle 38 on Reader Service Card

Rustproof Lockers, Shelving and Cabinets . . . Smooth, lustrous enamel is perfectly and permanently bonded to the phosphate undercoat—enemy of rust. Then it is sprayed with gleaming enamel and baked to enduring hardness. A catalog describing their complete line is offered you by Penco Metal Products Div., Alan Wood Steel Co.

Circle 123 on Reader Service Card

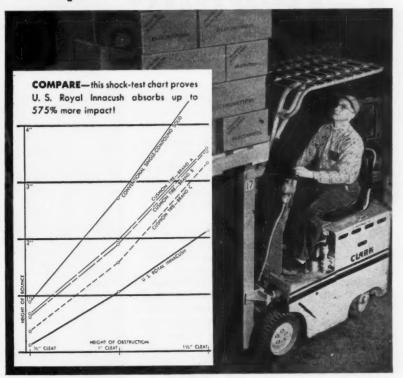
Unnecessary Manual Handling... of products can add unnecessary expense to the price of your product. Very frequently a Cyclone Metal Conveyor Belt can speed up processing time and eliminate superfluous personnel. A trained representative of the cyclone Fence Dept., American Steel & Wire Div., U. S. Steel Corp. will be glad to discuss your materials processing system with you. This can be arranged by writing to the company.

Circle 39 on Reader Service Card

Dock Covers . . . completely enclose the space between car and building doorways, protecting loading and unloading during inclement weather. Prevent accidents and insure against loss of heat or refrigeration. Full details are available from CAPCO.

Circle 27 on Reader Service Card

# Cushion Drivers, Loads, Vehicles up to 5½ Times Better!



# U.S. ROYAL

INDUSTRIAL TIRES

Because the U.S. Royal Innacush sponges up so much more shock, your drivers are less fatigued. Your loads are less apt to shift and break. Your trucks need less maintenance. And naturally—you cut handling costs!



THE BIG DIFFERENCE IS

Outside—it's tough for longer wear, cut and chip resistance.

**Inside**—it's soft, resilient, specially compounded for greater shock absorption and easier riding, as well as for long wear.





### **United States Rubber**

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Co., Ltd.

Circle No. 167 on Reader Service Card for more information

# RE-USABLE PALLET BOXES Slash Internation

Lower handling costs, ability to handle all sizes of parts, faster truck loading and unloading, substantial labor savings and less product damage . . . these are the advantages Bulldog Electric Products Company gained when they switched to Generalift Pallet Box handling.

Bulldog Electric, a division of I-T-E Circuit Breaker Company of Philadelphia, Pa., must move a wide range of parts from their plant in Bellfontaine, Ohio to the main plant in Detroit, Michigan. Use of Generalift Standard Re-Usable Pallet Boxes eliminates the need for costly single-use shipping containers for parts that range from tiny fasteners to bulky metal switch boxes. In addition to more efficient handling in warehouses and during shipment, company officials find that Generalift boxes eliminate spillage and keep parts cleaner.

While it was originally planned that the boxes would be returned to the Bellfontaine plant flat, most are reloaded with return shipments. Generalift pallet boxes have now made twenty or more round trips and are still good for many more.



All sizes of packages and parts are shipped in the Generalift Pallet Boxes. Loaded boxes are stacked three high when stored in warehouse as shown in background.

Loaded Generalift Pallet Boxes are easily handled by lift trucks in the warehouse or for truck loading. The trays of parts at right are about to be packed in another pallet box.



In the truck, pallet boxes are stacked two high. Use of pallet boxes provides faster loading and unloading.

#### Exclusive GENERALOOPS

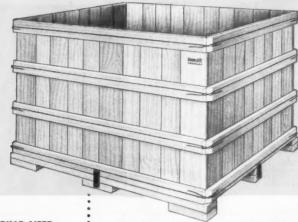
Exclusive Generaloop closures speed assembly and disassembly of pallet boxes and provide the strongest closure available in a re-usable pallet box—double wire strength and double mitered cleats at each corner. The wire closure is quickly twisted tight with a simple "Rosie Twister." The replaceable Generaloops are easily clipped to disassemble pallet boxes

# Standard GENERALIFT PALLET BOX FOR EVERY NEED...

Generalift Pallet Boxes can bring important material handling economies to your plant, too. Re-usable types for loads of 2000 to 3000 pounds are of resawn hardwoods with outside cleats. Also available as open-front bin type (with or without gate). All are equipped with Generaloop closures and four way entry skids. Find out exactly what Generalift Pallet Boxes can do for you. Let us send a man—he can also tell you about our expendable one-trip pallet boxes that can handle loads up to 1500 pounds. There is no obligation.

No. Regular	Catalog No. Open-Front Bin-Type*	Outside Dimensions	Inside Dimensions					
IR-L-24	IB-L-24	48 x 40 x 29%	451/2 x 371/2 x 2					
IR-L-30	IB-L-30	48 x 40 x 35%	451/2 x 371/2 x 3					
IR-S-24	IB-S-24	41 x 35 x 29%	381/2 × 321/2 × 2					
IR-S-30	IB-S-30	41 x 35 x 35%	381/2 x 321/2 x 30					





#### ENGINEERED CONTAINERS FOR EVERY SHIPPING NEED

Wirebound Crates and Boxes
 Generalift Pallet
 Boxes
 Stitched Panel Crates
 All-Bound Boxes
 Corrugated Containers

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Sheboygan; Winchendon, Mass.; General Box Co. of Mississippi, Meridian, Miss.; Continental Box Co., Inc., Houston.





# This truck suits 'em all!



WORLD'S MOST POPULAR pallet truck because it does so many jobs so well. Superbly built to withstand years of use and abuse.

**LIGHTWEIGHT** . . . lessens operator fatigue.

**EASY TO MANEUVER...** easy to pull ... patented booster roll permits effortless pallet entry.

**CONVENIENT FOOT PEDALS** lift and lower your load.

 Completely precision hydraulic for dependable operation. Has aluminum alloy construction, husky one-piece welded steel frame, safe dual-purpose brake, 270° turning radius.



Mail Coupon for full details!

The	DA	VMO	MID	COP	POP	ATION
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3306 Madison St., Greene, N.Y.

Send bulletin on Light- weight Hydraulic Pallet Truck.	NAME	TITLE
Please have a RAYMOND representative call.	COMPANY	
	STREET	
		*****

Circle No. 131 on Reader Service Card for more information

#### CATALOGS

Continued

Like Having Four Trucks Instead of One . . . there are four combinations of same-size drive and steer tires that are said to make the Clarklift CY 40 the most versatile truck you can find. Each tire combination mounts without machine modifications, thus change-outs are readily made according to the job. Further information is available from Industrial Truck Div., Clark Equipment Co.

Circle 31 on Reader Service Card

Special Sizes and Shapes of Shop Boxes... are economically produced by Convoy's "ChemBoard" process of rigidizing hitest corrugated board to remarkable strength. The company also manufactures standard size tote boxes—nesting, stacking and vertical sided—and also custommade to the user's specifications. Further information is available from Convoy, Inc.

Circle 36 on Reader Service Card

Many Styles of Grabs and Lifting Devices... in fact, there are over 500 designs to choose from. Mansaver Industries, Inc., the manufacturer, can give you complete information.

Circle 101 on Reader Service Card

Aluminum Hand Trucks... which are always bright and clean and require no maintenance are described in Magcoa Tobey Data File. Aluminum is non-toxic, and odorless, no painting or special finish is required. Available in many styles and sizes. The Data File is yours for the asking from Magnesium Co. of America, Tobey Aluminum Div.

Circle 99 on Reader Service Card

Laminated Tires Can't Go Flat . . . There's no air chamber in a Notat tire so there's nothing to go flat. And, unlike solid tires, Notats will "give" to prevent jarring of loads and damage to equipment. At in-plant speeds, Notats ride and steer like pneumatic tires. A price list and catalog is offered by the Notat Tire Co.

Circle 117 on Reader Service Card

How a Utility Company... uses an A-W hydraulic crane to unload poles and crossarms from incoming freight cars, to load poles on "dinky" trailers, to unload transformers, place them in storage and remove them for service and to handle reels weighing as much as 3000 pounds. They also find it equally useful in the shop. A complete report on the operation of the A-W hydraulic crane at this company is available from Austin-Western Works.

Circle 11 on Reader Service Card

Traffic Cop Assures Smooth Traffic Flow... Material being moved by belt conveyor is regulated by a "Traffic Cop" when it approaches a spur branch line, stopping one line while permitting the other to pass. This is just one of the engineered benefits you can obtain with Alvey-Engineered conveyor systems. Further information is available from Alvey Conveyor Mfg. Co.

Circle 179 on Reader Service Card

Take-Up Reel . . . Feeds and retrieves power cord in any direction. Enclosed copper graphite and collector rings eliminate dangers of exposed collectors, trolleys, etc. Neoprene covered cables seal out moisture, oil, and chemical fumes. Full information is available from Appleton Electric Co.

Circle 9 on Reader Service Card

Simultaneous Stapling of Tops and Bottoms... of cartons is one of the many advantages in using the International Dual Stapler. They are said to make a neater carton closure and save the storage space needed for cartons already set-up. They also meet the safety requirements of Rule 41 and are said to save you considerable time and money. Further information is yours for the asking from International Staple & Machine Co.

Circle 81 on Reader Service Card

Wire Containers... Full information on Palletainers, including names and addresses of users, or obligation-free consultation, is available to you from Union Steel Products Co.

Circle 166 on Reader Service Card



# OPERATE 6ft. AISLES

Raymond Electric Tiering Trucks operate in aisles 4 to 6 ft. narrower than required of conventional counterweighted tiering trucks . . . provide up to 50% more storage capacity right in your present warehouse! No need to build additional warehouse space! Send for free bulletins.



#### RUGGED CONSTRUCTION

Heavy-duty steel uprights, rams, forks and base legs

#### LIGHTER WEIGHT

Needs no counterweight; safe on low capacity elevators and floors

#### HIGH FREE LIFT

Elevate loads in low ceiling areas without increasing truck height

#### MANEUVER IN TIGHT PLACES

Due to short length and patented off-set drive wheel\*



Circle No. 132 on Reader Service Card for more information

# these mobile from owners lift profits, lower costs













In company after company, industry after industry, Mobilift owners tell us they are the *only* industrial trucks which slash handling costs by:

- 1. Lowering operating costs
- 2. Cutting maintenance costs
- 3. Moving more tonnage per hour per dollar

Here are some of the reasons why: Mobil-Matic\* Drive is the simplest, easiest-to-maintain automatic transmission on the market. Finger-Tip Controls provide a new standard of easy handling in the industrial truck field. Hydra-Lizer\* on "Sit-Downs", exclusive hydraulic equalizing rear suspension system automatically cross-compensates for floor variations up to 3". Fluid Coupling on "Sit-Downs",

gives the smoothest, cushioned starts and stops of any truck. Mobilifts are available with factory-installed LPG equipment, and time-saving attachments for specialized operations. "Stand-Up" models up to 3500 lb, capacities; "Sit-Down" models up to 5000 lb, capacities.

#### Free! Valuable Information

- How Mobilifts' exclusive features save dollars by increasing efficiency is described in this "Sit-Down" folder.
- This brochure describes the cost-saving features of the only "Stand-Up" line of gas-operated trucks on the market.

\*Trade Mark



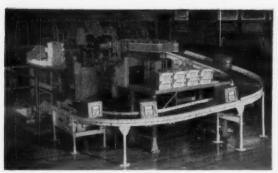
LAMSON

MOBILIFT® CORP 8

CORP 836 S. E. Main St., Portland 14, Oregon

Mobilift Sales and Service is Available in 75 Cities Throughout the U.S. and Canada

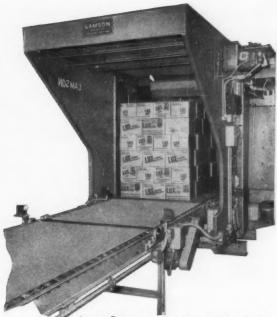
Circle No. 88 on Reader Service Card for more information



National Biscuit Company's giant new bakery in Chicago is completely equipped with Lamson engineered conveyors.



Robertson Heating Supply Co., Alliance, Ohio, uses a Lamson Overhead Tow System to speed its order filling.



Lever Bros. gave the job of designing the first Automatic Palletless Loader to Lamson engineers.

# do you move products like Coolies built the great wall.

Systematic work on the Great Wall of China began in 228 B.C., and was finally completed in 1644 A.D. Reaching a length of about 1400 miles, it is a testament to the back-breaking work of literally hundreds of thousands of Chinese. Today, you can't afford to move your products "Coolie-style."

In the package conveyor field, Lamson offers the broadest line. Nationally known companies depend on Lamson to engineer and install belt, gravity and live roll conveyors; continuous trolley systems; reciprocating vertical conveyors of all types; continuous combing verticals; and a broad line of automatic and semi-automatic pallet loaders.

Why not talk over your conveying problems with a Lamson engineer? He'll show you ways to cut costs and meet production schedules.

FOR FURTHER INFORMATION, CLIP TO YOUR LETTERHEAD

LAMSON CORPORATION

229 Lamson Street, Syracuse 1, New York

Plants in Syracuse and San Francisco Offices in Principal Cities

Circle No. 86 on Reader Service Card for more information

Have an engineer call me for an appointment.

Send me these bulletins:

"Conveyor Facts"

28-page Roller Gravity Bulletin

Utilize the Air Rights"

"Automatic Pallet Loader"

1 226

NOVEMBER, 1957



### News About AMHS

### New Flint Chapter Begins Program



The newly organized Flint Chapter began its first full year as a chartered chapter of AMHS this fall. The group received its charter Febru-

ary 28, 1957. It has 125 members. President of the new chapter is E. L. Greuling, director of material handling, Buick Motor Division, General Motors Corp. Vice president is D. D. Rutherford, superintendent of material and production control, Chevrolet-Flint Manufacturing Division. Secretary is B. Kefgen, Palmer-Shile Co., and treasurer is T. Quimby of G. M.'s Fisher Body Division.

The chapter has scheduled a program of eight monthly meetings for the 1957-58 year. These include a number of addresses and plant tours.

### West Coast MH Show Nears--Will Be Twice '56 Show Size

The Western Material Handling Show will be held in Los Angeles, Calif. on May 8, 9 and 10, 1958. This event, the second of its kind, will take place in Los Angeles' Great Western Exposition Center. It is sponsored by the Los Angeles Chapter of the American Material Handling Society.

The show is designed to bring together buyers and sellers in the tremendous Western industrial market. It will offer 140,000 square feet of exhibit space, consisting of two modern exhibit buildings immediately adjacent to each other.

All attendance will be controlled by invitation. There will be no charge for admission. The name, address and contact of everyone registered will be furnished to each exhibitor.

This show follows the extremely successful Western Material Handling Show of 1956. Officials predict that it will be twice the size of the '56 event.

One of the attractions of the show will be the First National Fork Lift Championship Rodeo.

For further information write: Material Handling Show, Inc.. 2807 Sunset Boulevard, Los Angeles 26, California.

### Detroit Chapter Presents College Library Grant

A gift of \$300 has been presented to the Wayne State University Materials Management Center by the Detroit Chapter of AMHS. The funds will be used to purchase new textbooks to

serve the Center's rapidly increasing enrollment.

Frank Frontiera, president of the chapter and director of material handling engineering for the Chevrolet Central Office, made the presentation. He was accompanied by Fred J. Bayer, Automatic Transportation Company, and Alan Gavern, Parke-Davis & Company, officers of the Detroit Chapter.



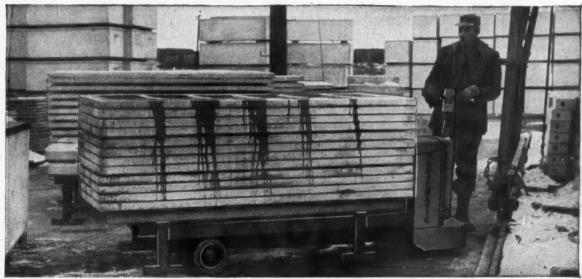
Frank Frontiera (kneeling) presents volumes purchased with \$300 gift to library of Wayne State University Materials Management Center. Fred Bayer (left) and Alan Gavern (right) assist. Dr. Spencer Larsen, head of Center, watches.

Nashville, Tenn.—Members of the Middle Tennessee Chapter of AMHS were addressed by **Del. S. Harder** at their October meeting. Harder is executive vice president, Basic Manufacturing Division, Ford Motor Company. He is commonly credited as the originator of the term "automation".

PHILADELPHIA, PA.—"Techniques in Automatic Batching" was the topic of the October meeting of the Philadelphia Chapter. Speaker was Walter M. Young, director of sales, Richardson Scale Co. He emphasized the importance of proper material handling techniques when using modern batching equipment. He also described uses of automatic controls in bulk materials flow.

ROCHESTER, N. Y.—A 24-week course in Material Handling is offered by the Rochester Chapter

(Continued on Page 46)



CONCRETE PRODUCTS: This Automatic TRANS-PORTER works indoors and out, day and night, in all kinds of weather for the Permacrete Products Corp.



TAGS & LABELS: Stacker model TRANSPORTER with special paper roll clamp handles and tiers 800-lb, paper rolls all day long for Central Tag Co.



VALVES & METERS: Marked improvement resulted in handling finished parts when this TRANSPORTER went to work for Rockwell Mfg. Co.

#### **AUTOMATIC TRANSPORTATION CO.**

Division of The Yale & Towne Manufacturing Company

Dept. W-7, 141 W. 87th Street, Chicago 20, III.

# Automatic TRANSPORTER

#### LEADS ITS FIELD IN COMPACTNESS... EFFICIENCY...ECONOMY...

Automatic TRANSPORTERS are available in many different types ...low and high lift platform or pallet...fork, straddle and retractable mast type stackers...tractors. These short, compact trucks perform all handling functions of standard rider type trucks, yet cost considerably less.

All models combine the flexibility, economy and dependability of electric power at its best with many exclusive operating advances. Capacities, 1,000 to 10,000 lbs. depending upon model. Complete line of attachments available.

But see for yourself the superiority of Automatic TRANSPORT-ERS. Figures below are for low lift pallet model comparison but other TRANSPORTERS show equally impressive advantages.

CA		SPORTER 000 LBS.	TRUCK A	TRUCK B	TRUCK C	TRUCK D
SHORTER	Overall length less load	211/2"	251/6"	263/,"	23¾"	24"
MANEUVER- ABLE	Maximum Overall width	29"	32"	32"	27"	321/4"
BETTER INCHING CONTROL	3 Speed Control	Yes	No	No	No	No
MAXIMUM HEAT PROTECTION	Class H Silicone Insu- lated motor	Available	No	No	No	No
MORE EFFICIENT	Hand or foot lowering control	Both	Hand Only	Hand Only	Hand Only	Hand Only

MAIL COUPON for complete TRANSPORTER specifications and FREE "Cost-Cutter" Materials Handling booklet.

Automatic Transportation Company Dept. W-7, 141 West 87th St., Chicago 20, III.
Please mail me complete specifications for the Automatic TRANSPORTER Line and include FREE copy of your booklet, "Materials Handling COST-CUTTER.
Firm Nameby
Address
City & ZoneState

Continued

of AMHS, in cooperation with the Center for Management of the Rochester Institute of Technology. This course is held on Tuesday evenings, from 8 to 10 PM. Tuition is \$48.00 including text and supplies. For further information, write to: Rochester Institute of Technology, Evening Division, 65 Plymouth Avenue South, Rochester 8, New York.

Passaic, N. J.—Seymour Oestricher opened the fall program of the New Jersey Chapter recently. Oestricher is technical advisor to the director of sales for American Machine and Foundry Co., Atomics Division. He spoke on handling methods used for radioactive material.

Among its other projects, this chapter is currently engaged in developing a Railway Siding Standard.

Houston, Texas-The October meeting of the Houston Chapter was devoted to "Handling Problems in Medium Size Industries". The November meeting will be a plant tour of WKM, Division of ACF Industries.

Officers of the group for 1957-58 are: Alvin M. Eaton, president, Donald E. Adams, national director, John B. Bradshaw, vice president and Larry E. Meyers, secretary and treasurer.

CLEVELAND, OHIO-Members of the Cleveland Chapter were addressed by Gerald B. Davis, director of sales for Baker-Raulang Company, at a dinner meeting October 17. Davis spoke on "New Applications of Lift Trucks in Industry."

Officers of the chapter for 1957-58 are: J. Harvey Roberson, president; Edward Cohen, vice president; Joseph E. Urban. secretary and treasurer: and Edward H. Leighten, national director.



NOW-with Controlled Pattern reinforcing for maximum strength!

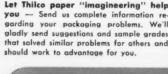
Test after test in actual service proves the superiority of Wrap-DRI'S "Controlled Pattern" reinforcing over other methods. In transit or in storage, you'll find Wrap-DRI protects better — is more economical to use.

SPECIAL FEATURES INSURE BETTER PROTECTION -(1) Both outer kraft sheets are asphalt coated to eliminate voids and provide double insurance against moisture transmission. (2) Wrap-DRI comes in extremely wide widths — greatly reducing number of lapped joints on large jobs. (3) Closely woven "controlled pattern" fibre reinforcement, bonded in asphalt, increases tear and punc-

VARIOUS GRADES AVAILABLE . - Wrap-DRI is supplied in MEDIUM, HEAVY, and SUPER GRADES — 50, 60 and 63 lb. per M square ft. Or, can be "tailor made" to fit your specific needs. All grades are also supplied Machine Creped for elasticized strength and greater flexibility.

PRINT DECORATED TOO! - Wrap-DRI can be imprinted for product identification and effective advertising, for only a few pennies more.

Let Thilco paper "imagineering" help garding your packaging problems. We'll gladly send suggestions and sample grades that solved similar problems for others and



Functional Papers FOR PROTECTION THAT COUNTS!

NEW YORK . CHICAGO DETROIT . MINNEAPOLIS

CONFORMS TO ODD SHAPES

TEMPORARY SHELTERS

CORDAGE & WIRE WRAPS

EXPENDABLE TARPAULINS

Glassines and Greaseproots, Water-Vapor Barriers, special treatment papers, MG and MF Krafts and Special Bags — most of them can be custom DECO-RATED to your exact requirements.

Thilco Papers Include Glassines and Greaseproofs,

> THILMANY PULP & PAPER COMPANY KAUKAUNA - WISCONSIN

Circle No. 158 on Reader Service Card for more information

# Here's NEW mobile efficiency for YOU!

BUCYRUS-ERIE

TRANSIT

MACHINE

CRANE
CLAMSHELL
DRAGLINE
HOE
SHOVEL

3/8-yd. excavator



The NEW Bucyrus-Erie 11-B Transit Machine is ready to roll extra savings into your industrial materials handling program.

You'll profit from the 11-B's simple, compact design; from its versatility and economical operation. You'll find the 11-B provides new speed and mobility for efficient performance on lifting, digging, loading, erecting, and plant maintenance jobs. What's more the 11-B gives you time-saving accessibility for low cost maintenance.

The two-section cab provides ample room for the operator and features sliding, hinged, and removable panels that open to power plant and main machinery. Unit or bench assemblies in main machinery permit quick service and easy replacement, minimizing downtime.

Fill in the coupon below and drop it in the mail TODAY. Give us an opportunity to explain ALL the advantages of the 11-B's simple, easy-does-it-design. You can enjoy unmatched quality at low cost with this fast-moving, hard-working, easy-to-maintain mobile crane-excavator.

BUCYRUS

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY . SOUTH MILWAUKEE, WISCONSIN



SEND FOR COMPLETE FACTS NOW!

#### **BUCYRUS-ERIE COMPANY**

South Milwaukee, Wisconsin

Gentlemen: Please send me details on the new 11-B.

Name

Organization

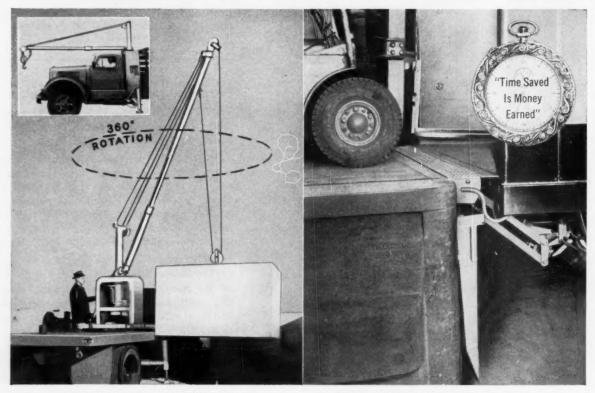
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# LOOK TO DAYBROOK

... for New Cost-Cutting Methods of Materials Handling by Truck!



#### DAYBROOK-WOODSIDE POWER LOADER

Now—truck power is used for loading-unloading operations—doubling the utility value of delivery and transport trucks—thereby CUTTING COSTS.

• DAYBROOK-Woodside POWER LOADER (Truck Crone)—Mounts in 20° space behind cab of truck, operates with full 360° rotation for loading, unloading and placement of loads up to 4000 pounds. New Remote Control System for greater versatility available as an extra.

#### DAYBROOK SPEEDLIFT POWER GATE® (SERIES DA)

• DAYBROOK POWER GATE—Series DA features both ground level and dock loading and unloading operation. Other models available in 600, 1100, 2000, 3000, and 4000 pound capacities.

Both the Power Loader and Power Gates are 100% hydraulically operated and controlled.

Experts in modern transportation recognize the value of the Power Loader and Power Gate methods of materials handling. Ask your Daybrook distributor for a demonstration!

SEND DAYBROOK LITERATURE CHECKED BELOW



POWER LOADER



POWER GATE



DUMP BODY-HOIST

Sign below, attach coupon to letterhead and mail in envelope.

DAYBROOK

Speedlift

DAYBROOK HYDRAULIC DIVISION

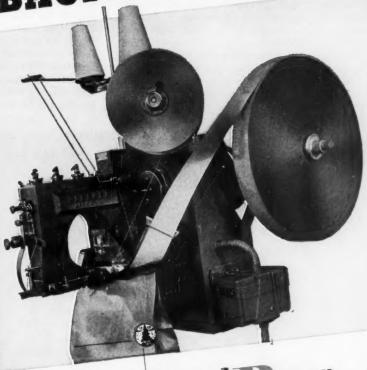
L. A. YOUNG SPRING & WIRE CORPORATION
BOWLING GREEN, OHIO



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Send NOW for your copy of this NEW Book!

# THE LATEST AND MOST VERSATILE BAGPAK, CLOSER



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220 EAST 42ND STREET, NEW YORK 17, N. Y.

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Read Commission - States -

This brochure gives inside details of the sensational, new bag closing machines just introduced by the BAGPAK DIVISION of International Paper. (Orders coming in from all over the U.S.!)

Write for your copy today—or send in this coupon.)

Bagpak Division, International Paper Company 220 East 42nd St., New York 17, N. Y.

Please send me copy of your New Bagpak\* Closer Brochure. I understand there is no obligation involved.

Name\_

Compan

Address.

FL-II

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# THE BIG

# 306-ton tower erected with American Tiger Brand

Setting A Steel Cylinder on end may not sound like a tough job. But when it goes up in the middle of an operating refinery, weighs 306 tons, is over 42 feet around and towers six stories high, it challenges the best engineering talent in the country.

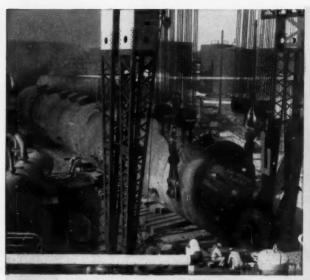
This difficult job was handled without a hitch by the Construction Department of the M. W. Kellogg Company of New York for a large refinery in the Southwest. The tower was built in the fabricating plant and brought to the location on a specially built railroad spur.

Two gin poles were erected on each side of the track with a total capacity of 400 tons. These were rigged with 8800 feet of American Tiger Brand Wire Rope, 7/8-inch diameter, 6 x 19, Improved Plow Steel with Independent Wire Rope Core.

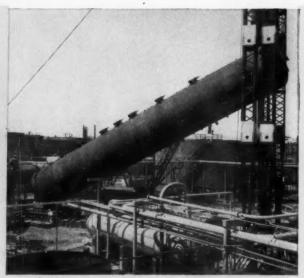
The lower blocks on each side were attached to a toggle bar carrying an equalizer sheave between the blocks so that a single load line could be reeved through the whole block system. Each end of the line went to a separate winch. With this rigging method, lifting forces of the individual winches were automatically synchronized and equalized, and the toggle bar and sheaves on each side therefore remained level at all times. to

th

Actual lifting took about eight hours. Four pneumatically powered crab winches furnished the pull to lift the top of the vessel while the



Tower ready for the lift showing wire rope rigging and universal-jointed lifting linkage.



Tower on its way up among tanks, piping, heat exchangers and other equipment.

#### AMERICAN STEEL & WIRE DIVISION

United States Steel, General Offices: Cleveland, Ohio

COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

#### USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed



UNITED STATES STEEL

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# 

# Wire Rope

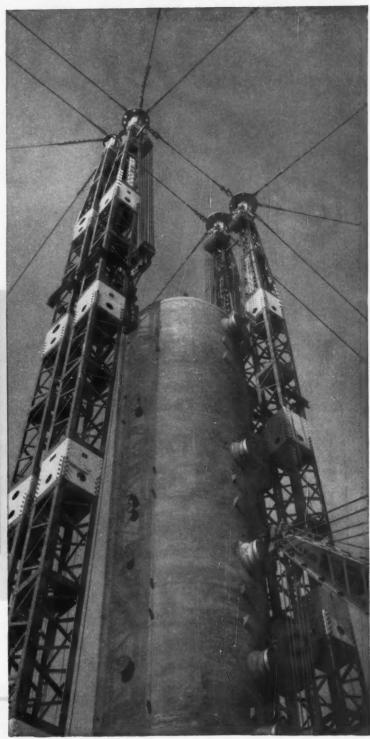
bottom was moved forward on a sled toward the foundation. As soon as the vessel was suspended and the foundation cleared, the signal was given to lower away! Like a monster candle into a candlestick, the tower came to rest, was anchored and the job was finished.

The "Big Lift" became another spectacular job handled by Tiger Brand Wire Rope. For more information, write for our booklet, "American Tiger Brand Wire Rope."



Power for the lift was provided by two pairs of pneumatic crab winches. Each winch in a pair hauled one end of the same load line.

Here the full 306-ton tower hangs from the gin poles suspended by %" diameter Tiger Brand Wire Rope.



#### No sudden bottleneck here...



... and now new active material gives the world's longest lived battery even greater durability and life

In Today's busy shipping department, increased work loads demand almost continuous truck availability—leave less room than ever for sudden failure. That's why the makers of Edison storage batteries—the world's longest lived batteries—have added new durability and service life with a new active material.

In addition to their tough, all-steel cell construction, Edison batteries now offer electrical durability that can't be matched even by the standard Edison long-life battery for day-in, day-out performance and long-term economy. Test after test prove that Edison storage batteries with the new active material cost less than ever to own and operate.

Today, there's an Edison battery with the new active material for your increasing materials-handling needs—from small walkies to big ram trucks. On your next electric truck purchase, ask your truck agent to include an

Edison battery—and compare true value. For complete information, see your Edison man, or write Edison Storage Battery Division, Thomas A. Edison Industries, West Orange, N. J. In Canada: International Equipment Co., Ltd., 90 Bates Road, Montreal, P.Q.



THE TRUCK THAT NEVER LETS

Quiet, clean, smooth, safe, low-cost electricity is also the most dependable power for industrial trucks. For any stop-and-go material handling job, instant on-off Edison battery power in an electric truck is the most dependable and economical combination.

Edison NICKEL-IRON Storage Batteries

... a product of Thomas A. Edison Industries of



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# AND OTES

OF PEOPLE AND EVENTS

ST. PAUL, MINN.



and service representative in Minnesota and Western Wisconsin for

Edward S. Miller has been made senior sales

Lewis-Shepard

Products, Inc., Watertown, Mass. Miller's headquarters are at 308 Snelling Ave., N. St. Paul.

#### DES MOINES, IOWA

Hawkeye Machinery Co. has been appointed to sell and service the Michigan line of tractor shovels, tractor dozers and excavator cranes, products of the Construction Machinery Division of Clark Equipment Co.

BERKELEY, CALIF.



Sales and warehousing of David Round & Son, Inc. hoisting equipment is now handled by Fletcher Sales

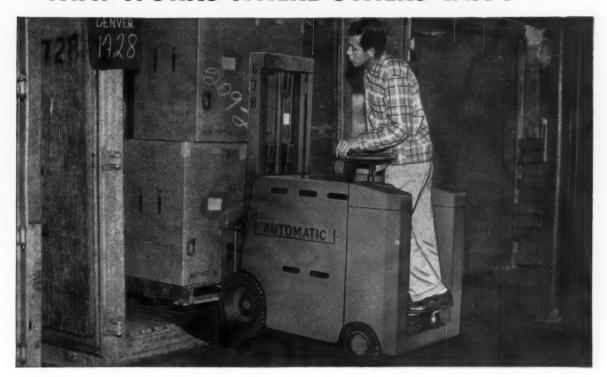
T. A. Fletcher Co. The company has been formed by Thomas A. Fletcher, formerly an associate of J. C. Fennelly Co. which until recently, handled the David Round line in San Francisco.

#### PINCONNING, MICH.

Magline Inc., fabricators of magnesium material handling and factory equipment has appointed four new factory representatives. The F. H. Trethewey Co., Charlotte, N. C., will handle the Magline interests in North and South Carolina. Western Florida representation will be by R. B. Curlin and Sons, with offices in

## Automatic DOCKER...THE LIFT TRUCK

#### THAT WORKS WHERE OTHERS CAN'T



### Shortest in its class... unmatched for easy maneuvering...and for efficient low-cost operation

This extra-compact, more maneuverable truck offers more advantages than any other of its type for materials handling in any industry. It is especially desirable where space is limited...works with ease inside trailers and in aisles, with or without pallet racks, too narrow for other similar trucks.

What's more, direct comparison shows clearly how definitely superior the DOCKER really is. Note the figures at right.

MAIL COUPON for complete specifications and FREE "COST-CUTTER" that shows how to chart and analyze your own materials handling needs.

CAPACITIES: 1000 to 4000 pounds

Factory Service Available in over 100 cities

**AUTOMATIC TRANSPORTATION COMPANY** 

Division of The Yale & Towne Manufacturing Company

Dept. W-7, 141 West 87th Street, Chicago 20, Illionis

WORLD'S LARGEST EXCLUSIVE BUILDERS OF ELECTRIC-DRIVEN INDUSTRIAL TRUCKS

	DOCKER	TRUCK A	TRUCK B	TRUCK C
2000 LBS. WITH LOAD LENGTH OF	48"	30"	40"	30"
SHORTER OVERALL LENGTH LESS FORK	53%"	65%"	651/2"	64"
SAFER-EASY ON, EASY OFF STEP HEIGHT	7"	13"	13¾"	13%"
MORE PRODUCTIVE LIFT SPEED F.P.M.	65	55	45	45
MORE VERSATILE GRADE CLEARANCE	45%	43.4%	45%	35%
MORE MANEUVERABLE TURNING RADIUS	56"	59"	64"	57"
MAXIMUM HEAT PROTECTION: CLASS H, SILICONE INSULATED MOTORS—ALL MODELS	Yes	No	No	No

Auto	mal	ic T	rans	poi	tat	ion	Co	mp	an	y										
Dept	. W-	7 .	1	141	W	est	871	th S	ŧ.,	Ch	ica	90 2	0,	III.						
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City Zone	5											***	Sta	se						

Circle No. 187 on Reader Service Card for more information

# **NEW! COMPACT POWER SWEEPER Priced for Small Plant Budgets!**



#### DESIGNED FOR CONGESTED AREAS. NARROW AISLES



GETS IN TIGHT SPOTS! Wayne "704" is designed for narrow aisles.

#### **ADVANCED FEATURES** OF WAYNE "704"

- More effective hopper capacity
- · No dust bag to empty
- · Longer brush life
- · 3-speed transmission
- · Vacuum attachments available for cleaning bins, equipment.

1-	
MYAW	E '704

Here's the answer for efficient power sweeping in plants of all types and sizes. The new WAYNE "704" power sweeper is smaller yet engineered to sweep faster, better...in and engineered to sweep faster, better...in and around tight spots, closer to machinery and equipment. What's more, the WAYNE is ruggedly constructed and offers big sweeper performance with many of Wayne's finer sweeper features at a budget price.

#### ASK FOR A DEMONSTRATION IN YOUR PLANT!

Let us show you how WAYNE sweeps cleaner, is more maneuverable and easier to operate. Fill out and mail coupon. No obligation.

Four sizes for every need.
Gasoline, LP gas or battery powered.

	W	AY	NE	MANU	FACTUR	NG	COMP	ANY	
13	16	E.	Lex	ington	Avenue.	Pol	mona.	Californ	nie

Demonstrate	Name	
the new Wayne "704"	Title	
Send folder	Company	
and list of satisfied	Address	
users.	City	State

World's Largest Producer of Power Sweepers for Cities and Industry

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OF PEOPLE AND EVENTS

Jacksonville and Tampa. Territory in Western Kansas, Western Iowa and Nebraska, east of the panhandle, will be handled by S. Riekes and Sons, Omaha. Philadelphia and surrounding area will be served by J. Morris Cope, of Lansdowne, Pa.

CHICAGO, ILL.



L. H. Lundstedt

has been appointed Illinois and Wisconsin representatives of the Wiretex Mfg. Co., Inc., of Bridgeport,

The L. H. Lundstedt Co.

Conn. Wiretex specializes in the fabrication of heat-reisting alloys and corrosion-resistant materials such as heat-treating fixtures, retorts, muffles, and baskets from the smallest, for jewelry parts, to the heavier types for capacities of five ton or better.

JERSEY CITY, N. J.



L. F. Nero

Louis F. Nero has joined Fort Worth Steel & Machinery Company's Engineering Sales Division as regional sales engineer.

He will operate from the firm's Jersey City offices to serve industries in the New York area and other Eastern industrial centers. The company provides individually engineered systems for mechanical or pneumatic handling of bulk materials.

#### MINNEAPOLIS, MINN.

The Yale & Towne Mfg. Co., Materials Handling Division, has appointed the William H. Ziegler Co. franchise representative for Yale industrial trucks in

Minnesota and the ten western counties of Wisconsin. Ziegler maintains sales and service branches in Crookston, Hibbing, Duluth and Mankato, in addition to the company's headquarters in Minneapolis. The company also operates thirteen mobile service units throughout its territory to perform preventive maintenance and service work in the users' location.

#### SOUTH BEND, IND.



Brandywine Industrial Truck Co. has been appointed franchise representative for Automatic Transportation

W. F. Sullivan

Co., Chicago, Ill. Territory serviced will include the upper third of Indiana with the exception of two counties, Lake and Porter, as well as the Michigan counties of Berrien, Cass, St. Joseph and Branch. W. F. Sullivan, owner of the company has been in the industrial truck business about ten years.

#### NEW YORK, N. Y.

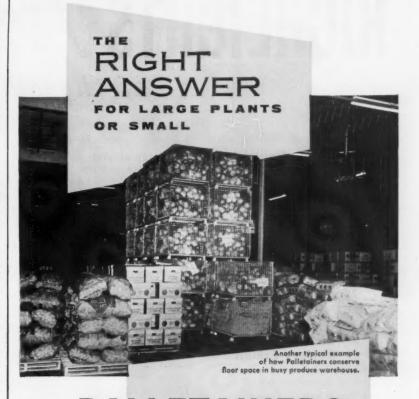
The Colson Corp., manufacturers of material handling equipment and institutional wheeled products, has moved its greater New York sales office to 215 Fourth Ave., E. L. Missmer is branch manager.

#### CHICAGO & MINNEAPOLIS

Philco Corporation's Government and Industrial Division has added two sales representatives for closed circuit television and the "Audipage" system. Edward Electric Co. of Chicago sells them in the State of Illinois, and Sound and Television Systems, Inc., of Minneapolis, covers Minnesota.

#### MESA, ARIZONA

Frank Hockett Company has become sales representative for The Fairbanks Company in all New Mexico. Bronze and iron body valves, dart unions, casters, hand trucks, wheels and other equipment will be handled.



# **USP PALLETAINERS**









Why pay a premium for wasted floor space when you can make it do double triple duty by simply storing, stacking or transporting your products or materials in USP Palletainers.

Palletainers are available in a wide range of sizes, types and styles to meet your needs. Engineered to handle light and fragile products, or heavy unit loads up to 6000 pounds each with perfect safety and full inventory visibility. They'll stack to the rafters and cut your shipping losses, too. And...when empty, they can be folded flat for space saving and lower return freight rates.

No matter what you manufacture-store or transport - in a large plant or small... You need Palletainers!

You can see for yourself how USP Palletainers will quickly pay for themselves in your plant. Ask for your own copy of the big, new Palletainer catalog today. It's profusely illustrated with interesting, money saving applications plus complete specifications and construction details.





UNION STEEL PRODUCTS CO.

Circle No. 166 on Reader Service Card for more information

# HIGHLIGHTS

### of the Month's News

Gaillard Standardization Seminar In San Francisco A five-day seminar on industrial standardization will be held at the St. Francis Hotel, San Francisco, from November 18 through 22, 1957, by Dr. John Gaillard. Formerly a member of the staff of the American Standards Association and a lecturer at Columbia University, Dr. Gaillard was the 1954 recipient of the ASA's gold Standards Medal award "for leadership in the development and application of voluntary standards." The primary objective of the Gaillard Seminar is to assist top management in setting up a standards organization, developing work procedures and programs, and training staff men in standards engineering functions, including specifications writing.

Franklin Institute Shows Storage Battery Exhibit An educational exhibit which provides an animated explanation of a storage battery's performance was unveiled at the Franklin Institute in Philadelphia. Push button activated, this display simulates two battery plates being immersed in a transparent plastic tank of fluid which represents an electrolytic solution. Trains of flashing lights indicate the flow of current from the battery as it discharges, and to the battery while it is being charged.

SAM Sponsors Cost Reduction Workshop The Kansas City Chapter of the Society for the Advancement of Management and University of Kansas Extension are sponsoring a Cost Reduction Workshop in Kansas City on November 15. Phil Carroll, nationally known consultant will conduct a conference program which stresses such subjects as "Planning Budgets to Reduce Costs"; "Finding And Plugging Profit Leaks"; "How Supervisory Personnel Can Cut Costs". The workshop is expected to attract industrial engineers, plant managers, superintendents, foremen, methods and time study men, office managers, and cost accountants.

Largest Plant Maintenance & Engineering Show In Chicago The 1958 Plant Maintenance & Engineering Show, scheduled for Chicago on January 27:30, will be the largest in its history, according to Clapp & Poliak, Inc., the exposition management. The annual Plant Maintenance & Engineering Conference is set for the same week. An important aspect of both show and conference will be the presentation of methods and equipment for eliminating air and water pollution inside and outside plants.

Navy To Sponsor '58 Symposium The Department of the Navy, in cooperation with other Military Departments and the Department of Commerce, will sponsor the Fourth Joint Military-Industrial Packaging and Materials Handling Symposium in Washington, D. C., during the week of September 29, 1958. The Symposium's theme will be: "Imagineering To Meet Tomorrow's Needs." Highly qualified leaders of government and industry will discuss packaging and handling needs through 1968 on the basis of current industrial and military estimates.

### Control is SMOOTH with the

# NEW LEWIS-SHEPARD ROTO-CAM CONTROL HANDL



SMGOTHER OPERATION...

Dynamic Braking gives cushloned stops—Controlled Plugging permits SMOOTH but instant reversing

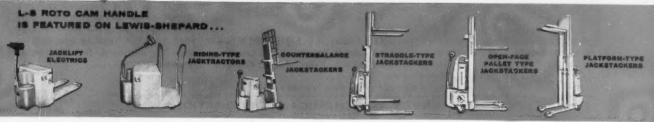
2 speed operation ...
2 speed operation in both forward and reverse gives power when you need it with "flick of the wrist"

AFER OPERATION...
double braking, no danger of jamming gives maximum operator safety

The new, exclusive L-S Roto-Cam Control Handle is the biggest step forward in "walkies" in years. It gives cushion-smooth starts and stops . . . minute inching and spotting...lets you reverse truck direction quickly, safely - merely by a fingertip turn of the control handle.

For double safety, there's double braking. Dynamic braking operates automatically when control grip is released. Emergency solenoid brake takes over when control handle is in operator safety positions.

GET FULL DETAILS on the new L-S Roto-Cam Handle and the many different trucks in the L-S Electric Line. Mail coupon today.





he COMPLETE line of materials handling equipment

Circle No. 93 on Reader Service Card for more information



1311 Walnut Street, Watertown 72, Mass.



se	send	me:	Roto-Cam	Control	Circular	#34-1
			Complete	line cate	aloa	

NAME.

TITLE.

COMPANY. ADDRESS



FMC LOCK-LOAD PALLETIZER loads up to 36 cases of beer per minute—automatically, with speed, safety and savings!

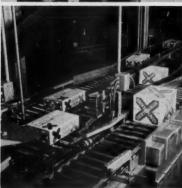
One machine, the FMC BARREL LOADER, palletizes 455 lb. drums, 120 lb. kegs or 35 lb. pails—safely—automatically! No more manhandling!





FMC 20-20 PALLET LOADER-UN-LOADER handles up to 2400 cases per hour—automatically! Eliminates handloading and breakage!

Exclusive FMC CASE SEGREGATOR can save up to thousands of dollars in conveyor costs! Sorts and distributes different sized cases—automatically!



THE PRACTICAL ANSWER TO EFFICIENT, ECONOMICAL AND SAFE MATERIALS HANDLING IN EVERY PLANT:

# **AUTOMATED HANDLING SYSTEMS**

ENGINEERED BY FMC

PRODUCTION SPEED, improved labor relations, reductions in package damage and accident rates—these benefits and many more are yours when you "automate with FMC." FMC materials handling equipment is designed by Systems Engineers—men well-grounded in all phases of handling methods, men fully-appreciative of the tasks a well-integrated, fully automatic system must be able to handle. This practical know-

ledge, gained through years of experience, coupled with the advanced, precise manufacturing techniques of FMC, results in 'automatic handling equipment that's efficient, completely dependable, and versatile enough to handle many material handling problems—including yours!

THIS FLEXIBLE EQUIPMENT— Lock-Load Palletizers, Barrel Loaders, simultaneous Pallet Loader-Unloaders, Automatic Case-segregators—plus FMC system accessories including conveyors, electronic controls, stackers and unstackers, accumulators and combiners, can provide your plant with a modern, smooth-flowing handling system efficiency-engineered to your specific requirements! Let FMC Systems Engineers put the profit back in your materials handling operation — write for illustrated, fact-filled bulletins today!



Putting Ideas to Work

#### FOOD MACHINERY AND CHEMICAL CORPORATION

Materials Handling Section, Riverside, California - CHICAGO • SAN FRANCISCO • LOS ANGELES

Please send me literature:

☐ "FMC LOCK-LOAD PALLETIZER" ☐ "FMC PALLET LOADER-UNLOADER"

"FMC BARREL LOADER"

"FMC CASE SEGREGATOR"

NAME

Company.....

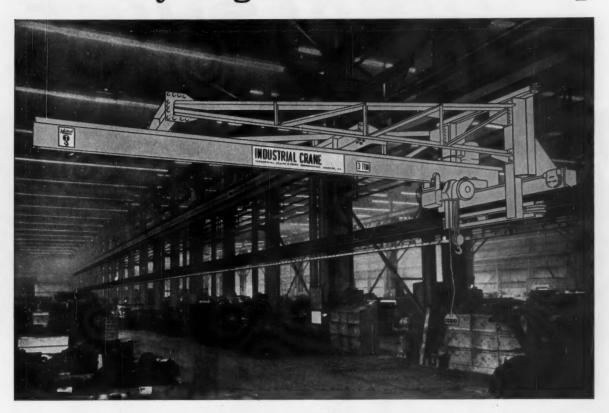
Address\_\_\_

\_ City\_\_

State\_\_\_

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# 14 Industrial Cranes chosen by largest railroad car shop



#### wall traveling jib crane features maximum hook coverage

This mammoth railroad car shop installed 14 Industrial wall traveling jib cranes to obtain maximum flexibility of operation without obstruction of floor space or interference of overhead cranes. Operating singly or in multiples these Industrial cranes easily move along the long runway with assembly line load and in effect give infinite number of jib crane installations depending on requirements.

Consult with Industrial Crane & Hoist for practical answers to your materials handling problems.



3-ton capacity with 30 ft. span Wall Traveling Jib Cranes with Hicarbon steel boom. Cranes operate on six double flange 12" forged steel wheels rolling on two horizontal and one vertical runway.



#### INDUSTRIAL CRANE & HOIST

INGERSOLL PRODUCTS DIV. BORG-WARNER CORP.

1530 S. PAULINA STREET, CHICAGO 8, ILLINOIS

Export Sales: Borg-Warner International, 36 South Wabash Ave., Chicago 3, Illinois Circle No. 77 on Reader Service Card for more information

NOVEMBER, 1957

50

### **NEW ALLIS-CHALMERS**



SHIFT

TORQUE CONVERTER DRIVE

# Makes lift truck operation





### CHANGES DIRECTION - SMOOTHLY

Just flip lever ahead for forward, back for reverse — with light finger-tip touch. You'll be surprised how rapidly and smoothly you change direction, without jerking. You work fast, stay fresh, get more done.

Here's new smoothness



POSITION LOADS QUICKLY, ACCURATELY WITH NEW INCHING CONTROL

Inching pedal lets you move fast or just creep, always under *full*, *positive* control. With this you have *full engine power* for fast lifting, even while inching. Depressing inching pedal further applies the brake.

TWO NEW SAFETY **FEATURES** 



Engine will not start while truck is in gear, and POWER SHIFT automatically returns to neutral if operator leaves the seat - two important steps forward for safety.

ENJOY SIMPLICITY, RELIABILITY, TOO

POWER SHIFT Drive is simple to operate and service - dependable, too.

# easier than ever before!

HAVE FULL POWER. FULL CONTROL-ALWAYS



The truck is never out of control. There is a positive power coupling all the time the direction

selector lever is in forward or reverse. No coasting down incline . . . no dangerous delay between power application and braking.



Brake to stop — merely release pedal to restart. Applying brake pedal, in familiar position at left of accelerator, does not break power coupling. Engine is utilized to help brake and thus provide more positive braking and longer brake life.

MULTIPLY WORK CAPACITY, INCREASE GRADABILITY WITH TORQUE CONVERTER DRIVE



The torque converter, on all Allis-Chalmers trucks with POWER SHIFT Drive, auto-

matically matches power to load, multiplies working ability, increases gradability. It smoothes operation, extends life of both engine and truck, avoids clutch trouble.

Get the complete story on how POWER SHIFT saves time, makes driving trucks easier, helps get more done. See your Allis-Chalmers material handling dealer . . . or write for Bulletin BU-465.

of operation-with more speed, less fatigue



ALLIS-CHALMERS, MATERIAL HANDLING DEPT., BUDA DIVISION, MILWAUKEE 1, WISCONSIN





### News About SIPMHE

### A New President Thinks Things Over

By John Mount President, SIPMHE

FEEL greatly honored for having been elected president of the Society of Industrial Packaging and Material Handling En-



ginners. Speaking for all the new officers, we only hope that we will follow successfully the wisdom and ability of our predecessors. It was through their wise and careful guidance that our Society grew in a little over ten years to an established national group.

We realize that the success of your Society is in the individual members and the Divisions they represent. We are all part of a national team, and the greater the activity of the membership, the greater will our divisions succeed in their accomplishments, and in turn the whole Society.

On my part I dedicate my term of office to following the Engineers Creed which we adopted recently. To the best of my ability I will devote my professional knowledge to the advancement and betterment of our Society.

An important part of SIPMHE's activity is our Na-

tional Education Committee, I should like to talk about it for a while,

This Committee was formed by our National board of directors in 1950, for the purpose of raising the professional status of packaging engineers and handling engineers. It does this through technical information in both these fields, and through conformance with the accepted ethics and practices of the engineering profession.

One of its most important jobs is its study of the status of educational programs in our field. As a result of this study, it has come up with many valuable recommendations regarding college educational programs. You are probably familiar with most of these; among them is our now famous Short Course.

Much has been done on local levels as a result of the National Education Committee's work. In fact, it is here that some of the important progress can be made and is being made. I want to stress the importance of this work. Truly, it is in such achievements as these that our Society is able to do its most constructive work.

tion plaque to retiring president **Pete Henningsen.** A film, "Simple Arithmetic in Packaging", was shown at this meeting. The film was shown through the courtesy of Gaylord Container Corp.

CHICAGO, ILL.—Evening sessions in conjunction with the Purdue University Correspondence Course are being held by SIPMHE's Illinois Division. These sessions are open to the public. Participants need not be members of SIPMHE, nor is it necessary for them to enroll in the Course in order to attend.

The Illinois Division is also planning to offer a technical information service to its members. Under this plan, members will be able to order technical literature from a table-top display of trade publications that will be available at all meetings.

Los Angeles, Calif.-The Southern California Division held a dinner meeting on October 2, highlighted by two prominent speakers. C. T. Morrow spoke on a paper he recently presented at a Naval Research Symposium at Massachusetts Institute of Technology. The paper is titled, "An Approach to the Design of Shipping containers for Replacement components and Small Missiles." Morrow is with the firm of Ramo-Wooldridge. The other speaker was Dr. Steve Urenka, Douglas Aircraft Co., who gave a summary of the other papers presented at the NRL-M. I. T. Symposium.

New directors for the Division are: Mrs. Olive Salembier, Specification Package Engineering; and Ray Christian, Nolan Paper Co.

YORK, PA.—Ray Wells, chief packaging engineer of Armstrong Cork Co., was guest speaker at the first meeting of the new year for the Central Pennsylvania Division of SIPMHE.

The Division's Education Committee has begun "study sessions" on the Purdue University packaging course. The first session,

covering lessons 1 through 4, was held on October 9.

MINNEAPOLIS, MINN.—The first meeting of the season for the Minnesota Division was held recently, and was highlighted by J. W. McReynolds, past national president, presenting an apprecia-



# Save 2/3 pon Sealing Time!

Under Rule 41 reliroads have now approved the use of 2 strips of reinforced tape for sealing corrugated boxes. Stathart lends itself to production line sealing of cartons with mechanical equipment.

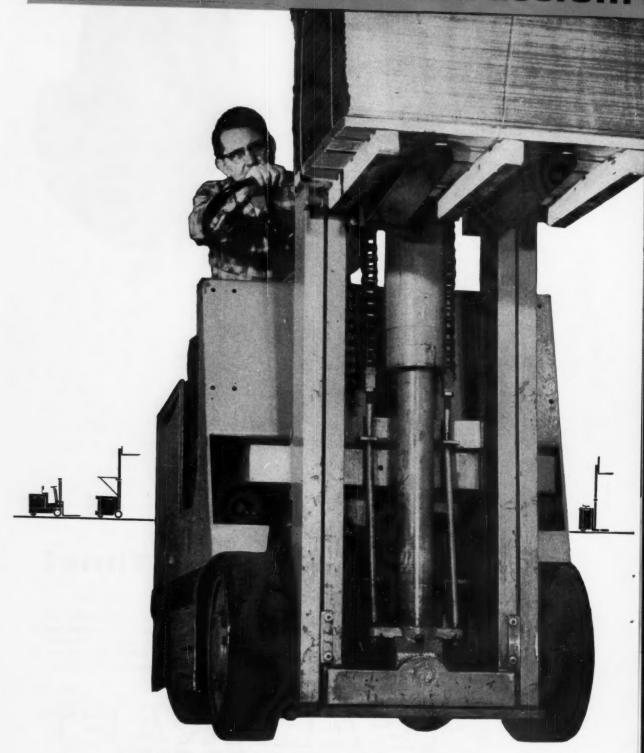
With 2-way reinforced Sisalkraft Sealing Tape you automatically save two-thirds the time on every carton sealing job. Yes, and you save tape and labor as well as time. Write to us for more facts about Sisalkraft reinforced tape and nearest source of supply. American Sisalkraft Corporation, Attleboro, Massachusetts. Makers of sealing tape stock for the Gummed Paper Industry.

SALKRALET

SEALING TAPE

Circle No. 7 on Reader Service Card for more information

# NOW-for electric truck users...



BATTERIES FOR INDUSTRIAL TRUCK . DIESEL STARTING . RAILROAD

### 2 NEW batteries from C&D!

# Get extra life, extra capacity for every make and style truck with C&D Slyver-Clad® batteries

You get extra capacity—yes, and extra life, too—when you use C & D's proven Slyver-Clad® batteries!

Electric trucks powered with these remarkable batteries work through the longest shifts and move the most material before recharging—thanks to C & D's Five-Fold Slyver-Clad construction. This exclusive method of insulation retains the active materials on the plates, and assures maximum capacity throughout the long, useful life of the battery.

Famous Slyver-Clad construction is not new. It is the only time-tested construction proven to be responsible for increasing the capacity available per unit of space, and simultaneously increasing the life of batteries over the last decade.

Why be satisfied with less than the best. Specify Slyver-Clad—the premium battery for Motive Power Service.



For low silhoughts trucks. Type CMS. From 6

For low silhouette trucks—Type CMS—From 6 cells up—55 A.H. per positive plate—Capacities from 220 to 880 at the 6 hour rate—A new, low battery for the low silhouette trucks—Provides 55 A.H. per positive plate where 40 A.H. has been the standard.



For rider trucks—Type HC—From 6 cells up
—Minimum of 72 A.H. per positive plate on
delivery—Capacities from 288 to 1152 at the
6 hour rate—Sets a new standard for battery
capacity for standard rider type trucks.

The better battery buy is

BATTERIES, INC.

SINCE 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

CARLIGHTING AND AIR CONDITIONING . TELEPHONE . CONTROL AND AUXILIARY POWER

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NOVEMBER, 1957

65



# LOW-COST CRANE BRIDGE DRIVE UNIT SPEEDS UP WORK CYCLE AND SAVES MONEY

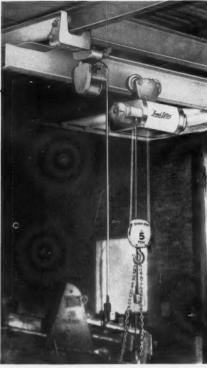
Many a plant can cut production costs materially by converting hand-operated crane bridges to electric travel. The economical 'Budgit' Bridge Drive does the trick. This rugged "package" unit can be installed in an hour with a wrench. No drilling. No machine work to do.

The 'Budgit' Electric Bridge Drive can be used on handgeared one or two-girder top running or underhung crane bridges.\* It travels the bridge at moderate walking speed — helps maintain the operator's efficiency because no muscle effort is required. Pendant push buttons control bridge movement.

When you invest in a 'Budgit' Bridge Drive you get a compact unit with all operating parts enclosed; gearing that operates in oil; anti-friction bearings; a motor that withstands quick reversals; a magnetic contactor type controller energized by push buttons. We can supply the sprocket wheel for the cross shaft and whatever current collector devices are required.

Speed up your load-handling. Save effort and money. Equip your hand-operated crane bridges with the efficient 'Budgit' Bridge Drive. Ask your "Shaw-Box" Distributor for details or write us for Bulletin 376.

\* Bridge must have cross shaft, chain wheel and gearing. Total weight must not exceed 13 tons, nor require more than a 62½ lb. chain pull.



Single-Girder Underhung Crane Bridge equipped with 'Budgit' Bridge Drive. Series "700" 'Load Lifter' Electric Hoist with push-type trolley is used for lifting and lateral travel.



Single-Girder Top Running Crane Bridge equipped with 'Budgit' Bridge Drive. Final drive is by roller-type chain to a sprocket wheel installed on the bridge cross shaft.



"Package" Unit Crane Assemblies for erection on the site are available for plants not now profiting from crane service. Low in cost. Can be assembled without drilling or machining. We can also supply complete cranes bridges on which the 'Budgit' Bridge Drive can be installed.





MANNING, MAXWELL & MOORE, INC.

SHAW-BOX CRANE & HOIST DIVISION

366 West Broadway . Muskegon, Michigan

Builders of "SHAW-BOX" and 'LOAD LIFTER' Cranes, 'BUDGIT' and 'LOAD LIFTER' Hoists and other lifting specialties. Other Divisions produce 'ASHCROFT' Gauges, 'HANCOCK' Valves, 'CONSOLIDATED' Safety and Relief Valves. 'AMERICAN' and 'AMERICAN-MICROSEN' Industrial Instruments, and Aircraft Products.

In Canada: Manning, Maxwell & Moore of Canada, Ltd., Avenue Road, Galt, Ontario.

Circle No. 100 on Reader Service Card for more information



# Controlling Distribution Costs

#### BIG SHIFT TO MECHANIZATION

Mr. Manufacturer: How much of your customer's dollar do you receive?

If your operations are near average, chances are that as much as a hefty half of the selling price of your product represents an accumulation of the costs of getting that product to the user. Add them up: sales + marketing research + advertising and sales promotion + protective packaging + in-plant handling + storage and warehousing + dock handling + transportation: you'll find they add up to a total which might be as much as, or more than the actual value of the product coming off your production line.

Your greatest opportunity for distribution cost control lies in mechanization of the last five factors listed above. Yours may be one of a number of firms which have learned to control distribution costs through efficient handling in packaging, warehousing and transportation. Unfortunately, that number is small when compared with the number of firms still burdened by distribution methods which drive product price up and net profits down. Even more unfortunate is the fact that the inefficient distribution methods of some firms can add, directly or indirectly, to everyone's costs. It will take a coordinated attack by all of Industry, with standardized handling procedures as key weapons, to achieve positive industry-wide distribution cost control.

You won't find the usual Packaging and Shipping Section in FLOW, this month. Instead, this special issue on controlling distribution costs is, in effect, all packaging and shipping . . . . it is all material handling too. The articles which follow cover a broad area of operation, starting with the end of the production line and going through all material handling and related functions which are part of the job of getting the product to the customer. They reveal a "Big Shift to Mechanization" in progressive enterprises and provide encouraging signs that a coordinated approach to the problem of high distribution costs is both possible and probable.



Index of Effectiveness
Standard Cost / Actual Cost)

Receiving
Upper Control Limit

Upper Control Limit

J F M A M J J A S O N D
Index of Effectiveness
(Standard Cost / Actual Cost)

Shipping
Upper Control Limit

Lower Control Limit

J F M A M J J A S O N D

Lower Control Limit

FIGURE I

To evaluate effectiveness of shipping and receiving activities, here's a . . .

## Material Handling

### Work Unit You Can Use

By Kenneth W. Woodhead Deputy Materiel Officer, Naval Supply Centre, Montreal

WORK MEASUREMENT is the clinical thermometer of industrial management. You are the doctor. You use it from time to time to judge the health of your organization. It compares your current performance rate against a *standard* performance rate, or "normal", based on your past experience. The "normal" is peculiar to your company, although you may expect it to run close to the average for similar organizations.

Performance rates tell how much it costs to perform one work-unit. The work-unit selected should be an index of the total work performed.

The "standard rate" is the average derived from as large a body of data on past performance as may be available. The ratio between the standard rate and the current rate measures your "effectiveness".

#### No Substitute for Constant Scrutiny

A work measurement program is by no means a substitute for the searching scrutiny to which a well-managed company constantly subjects its operations. But such a program conveniently furnishes, at low cost, information which can be valuable to you in several ways. For instance, the effectiveness ratio enables you to rate current operating procedures and methods; the standard performance rate permits you to forecast the handling costs of future projects, or

the cost of overtaking any current backlog of work.

In practice, you record the effectiveness ratio at selected intervals on a simple chart or graph (see Fig. 1). You regard your standard performance rate as 100%. You may insert control limits above and below the standard rate, within which limits range the ratio may fluctuate without giving rise to alarm. If the current ratio at any time goes above the upper limit or below the lower limit, it denotes a situation which needs investigation. Any deviation is a symptom; like an abnormal body temperature, it causes concern only when the degree of deviation is large (and then only if no acceptable reason is evident).

An abnormal effectiveness ratio sounds the alarm; it does not put out the fire. Other means must be employed to track down the cause of the deviation. The reason may be immediately apparent. For example, the introduction of an improved technique or better equipment may explain a high ratio. A drop in morale, an all-considered change in system, a breakdown of equipment, a change in personnel, the non-availability of materials, etc., may be reflected by a low ratio. Your job is to seek out the cause and try to rectify the trouble.

Sometimes your effectiveness ratio runs steadily above (or below ) the 100% level. If this condition persists for a long period, you should revise the standard performance rate so as to reflect the new trend.

(Continued on page 158)

#### HOW TO COMPUTE WORK-UNITS

- I. Take the weight in pounds !
- 2. Round off to next higher multiple of 50 55
- 3. Divide by 100 5.5
- 4. Multiply by 2 to get "computed cube"
- 5. Take the actual volume in cubic feet
- 6. Compare the "computed cube" with the "actual volume and select the greater, to arrive at the "Handling Work Units"

#### SOME TYPICAL SHIPMENTS

Commodity	Weight (lbs.)	Computed Cube*	Volume (ft.3)	Handling Work Units
Copper tubing	505	11	10	11
Fire hose	1,550	31	75	75
Metal cabinets	11,000	220	750	750
Stationery	2,598	52	50	52

\* Computed cube is 2% of weight in pounds, rounded to next higher multiple of 50.

FIGURE 2

FIGURE 3

FIGURE 4: SUMMARY OF WORK-UNITS AND COSTS

Month	Function	Work-Units	Actual Cost	Standard Cost	Performance Rate (\$ Per Unit)	Effectiveness (%)
January	Receiving Shipping	5000 6000	10,000	10,000 9,000	2.00 1.47	100 102
February	Receiving Shipping	4800 5800	9,600 8,900	9,600 8,700	2.00 1.54	100 98
March	Receiving Shipping	4900 6200	9,400 9,300	9,800 9,300	1.92 1.50	104
Aprîl	Receiving Shipping	5000 5800	9,200 9,800	10,000 8,700	1.84	109
May	Receiving Shipping	4500 5600	9,300 8,400	9,000 8,400	2.07 1.50	97 100
June	Receiving Shipping	4300 5000	9,800 7,800	8,600 7,500	2.28 1.56	88 96
July	Receiving Shipping	4600 6800	9,000 10,000	9,200 10,200	1.96	102

"Standard cost" is obtained by multiplying the number of work-units by the "standard rate".

Standard Rates: Receiving—\$2.00 per work-unit Shipping—\$1.50 per work-unit

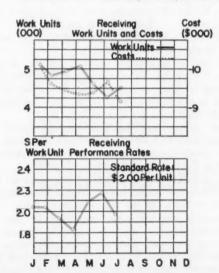


Figure 5

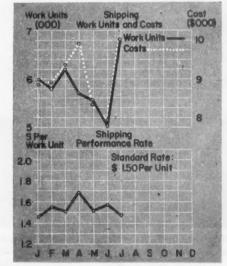
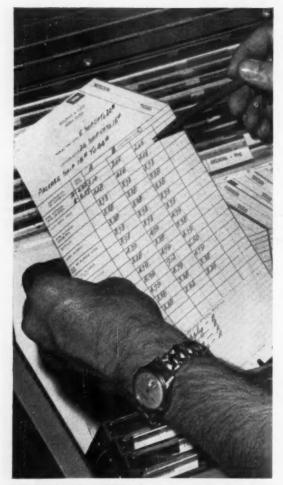


Figure 6



## **Fingertip Carrier Selection**



INDEX CARD SYSTEM keeps accurate record of rates for various carriers. Small savings per order add up to thousands of dollars on a year's shipments.

Savings in the thousands made possible by a system to pick the best carrier for any shipment.

YOU MAY BE SURPRISED how much you can save just in the selection of carriers for your shipments. The Fort Wayne Division of The Weatherhead Company was. The company suspected it could cut costs by keeping an accurate record of carriers and routes for shipments to any part of the country. But not even Traffic Manager John Wiersch, who originated the system, had any idea how much it would save until it actually went into operation.

The systems A card index file that tells at a glance (1) what carriers are available to ship to any point in the U. S., (2) shipping rates and (3) how long it will take.

The results: \$40,000 a year savings on an investment of slightly over \$5,000.

But isn't it just common sense to pick the cheapest carrier? True, but for a company like Weatherhead, shipping as many as 100 heavy orders a day, it becomes almost impossible to track down carriers on an individual basis for each order.

Four plants and two warehouses depend on shipping data kept on the cards. Since shipments are consolidated whenever possible, the traffic department also has the important job of coordination.

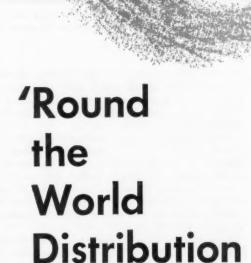
So useful is the information on the cards that Weatherhead will soon issue a booklet containing, in condensed form, all the information on them.

Incoming shipments are controlled by the file cards too. Suppliers are given specific shipping instructions with each purchase order. Any vendor or supplier who refuses to honor these instructions may find himself billed by Weatherhead for the difference.



CONTROLLING DISTRIBUTION COSTS





Computer helps Air Force ship radio and radar parts to bases all over the world

**B**RAINS AT WORK . . . Electronic brains . . . Their purpose: supplying vital electronic equipment to USAF bases wherever they may be.

The place is Dayton Air Force Depot, Gentile Air Force Station, Dayton, Ohio. As many as 200,000 different electronic items—over \$300 million worth—are stocked here. They go out to U. S. bases at the rate of thousands of orders a day, creating an inventory problem that would baffle a platoon of paperwork experts. But they are no challenge to an electronic computer.

Requisitions come to the depot by mail, Teletype and punched cards. Those coming in by mail or Teletype have to be converted to punched cards before the computer can process them; those already on punched cards are ready to go.

The first step is to transfer the information from the punched cards to a magnetic tape. As this tape is fed in, the computer automatically checks to see if the requisition is in order and if there is stock on hand to fill it. Once this is established the machine swings



ELECTRONIC COMPUTER fills Air Force parts orders throughout the world in less time than it takes to

read about it. It ships thousands of orders each day, keeping accurate inventory control at the same time.

into an intricate, government-type accounting routine that ends up with a directive to the Storage and Shipping Point instructing them to ship. It adjusts all inventory records, then goes on to produce all the statistical reports required by the Air Force.

Once this is done the computer converts the magnetic tape back to punched cards. When these reach the Storage and Shipping Point a tabulator takes the information from them. It automatically prints the necessary instructions to fill the order, as well as the shipping papers to get it on its way to the consignee.

All this takes place in less time than you just took to read about it.

The material handling system consists largely of overhead conveyors. They traverse their 5,742-footlong route at 35 to 45 fpm, covering the entire distance in 2-34 hours. Light loads are carried in steel baskets; steel platforms are used for heavier loads.

The packing section is the next stop along the conveyor route after the order has been picked. Most orders are packed in cans made of fibreboard with metal ends. When a container has been filled and

properly packed, a copy of the shipping document is placed inside and the top is sealed. Now all cans going to a given destination are weighed, put in cartons or crates, sped via roller conveyor to the Transportation Division and out they go.

Before canning average packaging cost was 85 cents. This is reduced to 16 cents by the cans (which, incidentally can be used over and over again) for an annual savings exceeding ½ million dollars.

Before canning 65 packers turned out 1100 packages daily, at a cost of \$936. More than twice that many packages are now turned out by 27 packers, at a cost of \$388.80.

Once past the shipping operation a final computer operation still remains. Shipping documents are once more converted to tape so that the shipping data can be entered on the paperwork, completing the history of the order. A watchdog function then follows, Every seven days an employee gathers up all cards that don't have completed entries. That makes it easy to see which orders are still unfilled, and why.

The big computer keeps busy in other ways too.





INCOMING ORDERS are received by mail, Teletype (right) or by punched card system (center). Mail and Teletype orders must be converted to punched cards before the computer can process them.



OVERHEAD CONVEYOR runs through warehouse areas over a route more than one mile long. Platform shown in foreground transports heavy loads; steel baskets, background, carry light goods.

When not filling orders, it spends much of its time on such projects as "Due-in-Assets" and "Provisioning and Identification."

"Due-in-Assets" is a method of checking outstanding items on procurement contracts. The computer lists all items due, and present all the information needed for tracking them down, or re-ordering if needed. Here again, as in order filling, the job is done with lightning speed and accuracy that could never be matched manually.

"Provisioning and Identification" is a complicated system of keeping provisioning records up to date. It involves nine separate functions. Many of these are cross-references of part numbers and stock numbers that identify all parts. Some of these function are so complex that they could never be done manually!

Officials at the depot are eyeing the big electronic brain with the thought of giving it still more work. It is becoming a vital tool to the Air Force. And, officials point out, it never complains about over work.

> Courtesy of Remington Rand Division of Sperry Rand Corporation



FIBREBOARD DRUMS with metal top and bottom are used for packing most orders. Drums illustrated here are the largest used; most are considerably smaller.

SIXTH FLOOR

FIFTH FLOOR

FOURTH LOOR

THIRD FLOOR

SECOND



Storage Racks



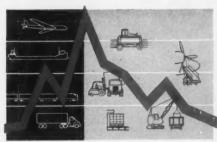
Storage Racks

Storage Racks



FIRST FLOOR





## **Multiple Order Picking Reduces Shipping Time**

ANDLING and shipping as many as 16,000 daily orders could be a big material handling headache but it isn't for General Merchandise Company, Milwaukee wholesale firm.

These orders, received from customers all over the world, may call for any quantity of any of the thousands of brand name products stocked by

The headache would arise from this tremendous variety of items; they range all the way from hair pins to refrigerators. And customers will not wait for shipments.

Here's how mechanized material handling makes it possible for almost immediate shipment of this great quantity of orders from tremendous stock of different items.



The company's facilities are housed in eight buildings scattered in and around Milwaukee. Five of these buildings are six-story receiving surplus storage centers. As the material is received, it's unloaded onto belt conveyors and carried to either the first floor for marking, sorting, and pin ticketing; or to the upper floors for primary storage. The same belt conveyor is hinged and carries to both floors.

On the first floor material is transferred automatically from the belt conveyor to a gravity roller conveyor that delivers to the work area. Here,

the items are manually packed and sorted—then placed on a bank of roller conveyors that serve as work benches. These work benches are arranged in two rows, separated by a six foot aisle. On the first bank of benches (conveyors) material is sorted and checked for correct size, etc., and shoved to the end of the line. A rail mounted transfer car that travels the six foot aisle transfers the items to the second bank of benches for pin ticketing and marking. The material is then prepackaged into sales units for stock bins. (See Figure No. 2)

After the material is boxed, it is carried to the upper

(More on next page)



CENTRAL WAREHOUSE and shipping center features organized material flow from top to bottom. Operations on each floor are: SIXTH, FIFTH and FOURTH FLOORS—storage for active stock and order picking; THIRD FLOOR—storage, order picking and sorting; SECOND FLOOR—packaging; FIRST FLOOR-shipping. Up to 16,000 orders go out daily. floors by elevator and fork trucks place it in storage racks. This is surplus a orage.

#### CENTRAL WAREHOUSE

The central warehouse or nerve center is a six floor building in the heart of Milwaukee. This building houses the active stock and facilities for order pick-

"B" SORT "B" "B" SORT "B" SORT "B" SORT "B" SORT "B" SORT "B" SORT "B" SORT

THREE SORTING OPERATIONS separate one multiple order into 216 individual orders. "A" sort breaks the order into four groups of 54 orders. "B" sort divides each group of 54 into three of 18. "C" sort separates groups of 18 into individual orders.

ing, packaging and shipping.

#### Here's The Material Flow

Surplus stock is carried to the central warehouse by truck and placed on an automatic pallet and dolly elevator for delivery to a specific floor, where it is stored in advance active stock.

As the orders are received they are combined into one multiple order, usually totaling fifty-four individual orders. A maximum of 216 orders is possible.

Order information is placed on gummed labels and sent to order picking. In other words, instead of picking individual orders, fifty-four are picked on all floors at one time. Half of the label is attached to each individual item.

The items are placed on a belt conveyor running down the center of the floors and when each floor has finished picking, the conveyor carries everything to a spiral chute that delivers to floor three and the first or "A" sorting operation.

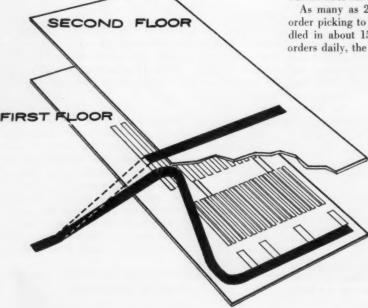
At "A" sort the material is sorted and placed on one of three conveyors that deliver to three "B" sorts. (Information on the gummed label tells which item goes where.) Here ("B" sort) the material is again separated into three groups and delivered to "C" sort, where the material is separated into individual orders. From "C" sort, after inspection, the items travel the spiral chute to the second floor where packing is done at any of the 100 packing stations.

The finished orders then follow a belt conveyor to a point on the second floor where they are separated onto three conveyors that carry them to any of the three shipping departments on the first floor (Parcel Post, Express, Truck & Freight).

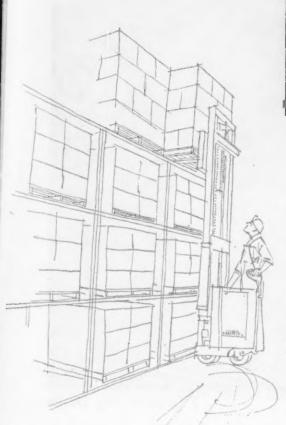
Shipping papers are made out and the order goes out the door for delivery. (See Fig. No. 1)

As many as 216 multiple orders from the start of order picking to the shipping department, can be handled in about 15 minutes. To ship a total of 16,000 orders daily, the company works two shifts.

Information courtesy Standard Conveyor Co.



HINGED CONVEYOR, at the receiving centers, transports incoming material to the first floor for sorting and marking. If material is received ready for stock, the same conveyor swings up and carries goods to the second floor for storage.





If manual handling limits your warehousing—

Do what this company did . . . . .

## Palletize For Greater Volume

xisting warehouse facilities at Read-Canaday Company, Anderson, Indiana, could not handle a steadily increasing volume. This increasing volume meant more orders, from a larger stock, shipped faster: the old warehouse and handling system just couldn't do it.

The company thought of a new warehouse, but the deal fell through. The only solution was to improve existing facilities.

A material handling company was consulted. With their aid, they took the old warehouse, threw out the old manual handling system, designed and installed a new system that met the increased demand.

#### Here's How It Works:

Three level storage racks were installed in banks throughout the

warehouse. The first two levels (shelves) are for active stock used to fill orders. The third (top) level is for surplus stock. All items are stored on a "how fast they move" basis. Fast movers are placed in racks near the shipping dock and items that remain in storage longer are kept farthest from the dock. Items are also stocked on a ton-mileage basis so that the largest and heaviest are near the shipping docks.

As soon as material is received, it's palletized. Three fork trucks move these pallet loads to their specific storage rack and place them on one of the three levels.

Mechanized handling and storing has increased the number of cases received and stored per man-hour from 125 to 350.

When an order is received, the information (quantity and items) is quickly put on punch cards, then translated on order pages

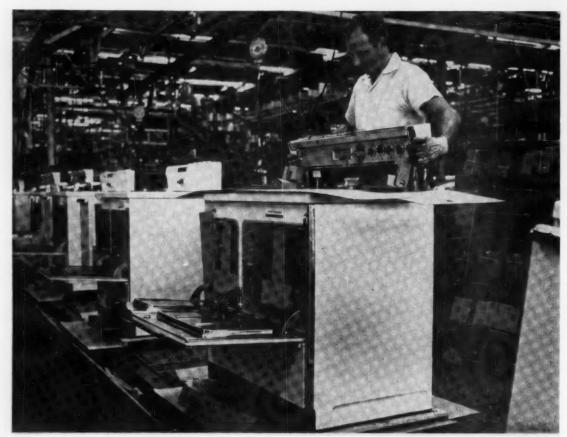
into directions for picking. These directions are simple because each item has a specific place in the warehouse.

The order-picker takes one page of directions for a specific order and fills it. One page usually calls for enough material to fill one four-wheel truck. When one page is completed, the picker takes the four-wheel truck to the shipping dock and takes another page.

One order might cover several pages of order directions, so several pickers each take one page. This system means continuous and simultaneous picking of each order regardless of its size.

At the shipping dock, individual orders are organized and loaded on trucks by a low-lift fork truck for delivery.

Mechanizing this handling operation resulted in shipping 15% more tonnage with 16% fewer men.



2 Days to Any Dealer

## GE's Ace-in-the-Hole

#### —Central Distribution

THIS MONTH the 1958 electric range pictured above will be displayed by General Electric appliance dealers all over the country. As it rolls off the assembly line at Appliance Park, Louisville, Ky., it becomes part of a distribution pattern involving not only ranges but laundry equipment, dish washers, disposals, refrigerators and air conditioners as well. It is a pattern that uses only one warehouse, although each of these products is made in a different plant. But that warehouse does an unparallelled job; no GE dealer is ever more than 48 hours away from delivery of any major appliance.

There are six plants in Appliance Park. Each is big enough to hold Yankee Stadium. The central warehouse covers some 750,000 square feet (1,250,000 when completed). It serves as a nerve center for distribution for all six plants. It is connected to all of them by an elaborate system of enclosed overhead

conveyors that shuttle the appliances from assembly to storage.

Photographer Walter Craig followed one of the new ranges through the entire distribution cycle. The pictures he took, shown on the following pages, illustrate how GE's appliance distribution works—from assembly line to final shipping.

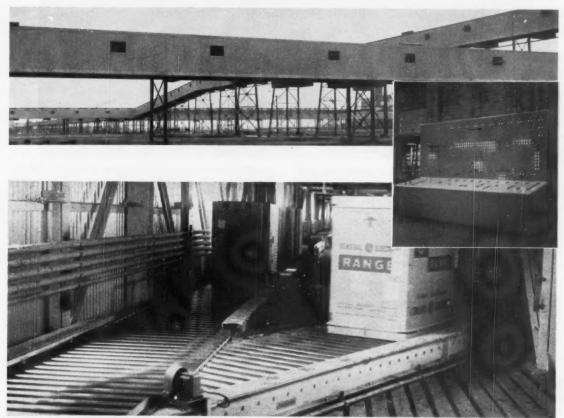
CONTROLLING DISTRIBUTION COSTS





AFTER PACKAGING, ranges ride inclined belt conveyor to staging. Here they are gathered into 30-foot trains on live refler conveyor. They are separated by

size, color, voltage, etc. on lift table, foreground. As range hits proper station keyed by electric eye, the chain drops away, allowing the rollers to take over.



ENCLOSED OVERHEAD CONVEYORS totalling 6400 feet connect central warehouse with six different plants. After sorting at make-up station, ranges move onto a brake belt, to accumulation conveyor. Limit switches then control movement up ramp, out of building, into overhead tunnels leading to warehouse more than half mile away. Below, ranges and washers merge into one conveyor inside tunnel. Washers are stopped

automatically to allow ranges to pass. Limit switches handle stop-and-go signals, are controlled from warehouse still almost a half mile away. Dishwashers will join this track further on. Inset shows electronic faultfinding panel located in warehouse. It controls the traffic in all tunnels. Vari-colored lights represent individual switches, motors, drives, etc. Failure of any light immediately pinpoints trouble anywhere along the system.



ELECTRIC EYE in foreground controls placement of individual units inside warehouse. Ranges at left come down spur from central warehouse conveyor. After they arrive in warehouse they will be shunted either to distribution or to storage. Ranges held in storage are stacked five high. Warehouse areas are broken down into individual sections reserved for each type of appliance, to facilitate shipping. Most conveyors used in the warehouse are of live roller type.



LOOKING INTO STORAGE AREA of warehouse from the balcony where controls are located. The spurs moving right and left from the main conveyor line lead into distribution zones for the various appliances. Spurs lead directly to inside shipping platforms where the merchandise is loaded into waiting freight cars.

THE END OF THE LINE is reached as the range arrives at the shipping platform. Here a lift truck equipped with blade attachment instead of forks lifts range for placement into freight car. Blade device fits under lid of carton, which is folded under and secured to the carton with steel strapping. Railroad spur is located immediately to the right of this picture. Since all appliances are stored under one roof, it is simple to ship mixed carloads to GE's appliance dealers and distributors.





## Containerization of Marine Cargo

by Joseph D. Carrabino

## 1. Advantages and Disadvantages

Containerization of general cargo may be the most promising innovation in the worldwide shipping industry. The following two articles are based on research sponsored by the Office of Naval Research, United States Department of the Navy. The first discusses ways to determine when containerization is feasible.

ARGO SHIPS earn no revenue while they are tied up to their berths. All they do is add to already high distribution costs. The average ship has a fixed cost of \$2000 to \$3000 per day while in port. Revenue results from charges on the transportation of goods by water—not for storage on shipboard at dock-side.

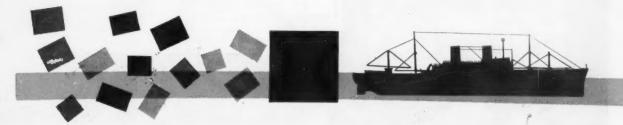
Commodities now being transported by ship are highly heterogeneous with respect to size, shape, density, etc. Therefore, highly flexible—but too often, also highly inefficient—handling systems must be used to move general cargo. Because cargo ships are designed for flexibility, the opportunities for the use of mechanical loading methods, such as conveyors, are limited. On specially designed ships, conveyors, and automatic equipment have achieved unloading rates of 2000 to 3000 tons per hour in the handling of bulk commodities. Normal handling rate for general cargo,

on the other hand, is approximately 10 to 20 tons per hour per hatch.

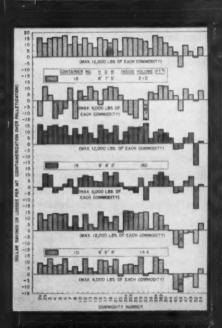
Through the use of bulk containers, the variety of pieces which make up general cargo can be homogenized to reduce handling problems. Several advantages and disadvantages of the use of such containers are apparent. Let's take a look at them:

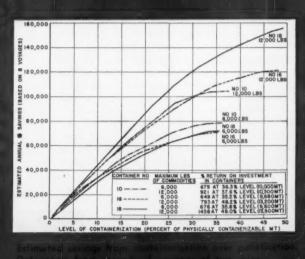
#### Advantages of Containerization . . .

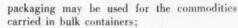
- Increase in speed of loading and unloading
   —reduction of turn-around time;
- 2. Protection against pilferage;
- 3. Protection against damage to commodities;
- Lower insurance rates (as a result of less pilferage and fewer damages);
- 5. Savings in packaging costs because cheaper



Commodity Package No. Hetrix No.	Commodity Name	Type Of Package	Package Size in Inches			Stowage Factor	Density LBS/FT3	Neasurement Tons	\$ Of Physically Containerizable Commodities (27,538 MT)	Revenue Dollars Per I:T	
		& d W									
2.	2	Pineapple, Canned	#Case	8	8	11	48.0	46.7	317	1.15	40.4
2b	2	Prunes	Case	8	8	11	84.5	26.5	134	0.49	51.6
3	3	Beer and Ale, Bottled	Carton	9	8	11	57.7	38.8	288	1.05	26.8
4	4	Pineapple Juice, Canned	Carton	8	10	11	45.7	49.0	108	0.39	39.1
5	5	Fish, Conned	Case	7	11	12	45.2	49.6	191	0.69	33.5
6	6	Vegetables, Canned	Carton	9	10	14	51.7	43.3	192	0.70	39.7
7	7	Soap	Case	10	10	14	108.2	20.7	424	1.54	33.0
8	8	Fish, Canned	Case	7	11	14	44.1	50.8	174	0.63	36.2
10	10	Wine	Case, Carton	10	13	14	63.1	35.5	103	0.38	26.1
12	12	Beer and Ale, Canned	Carton	5	11	16	57.0	39.3	179	0.65	29.0
13	13	Rayon Goods	Case	7	11	16	98.7	22.7	525	1,91	23.9
15	15	Glass Bottles	Case	9	11	16	161.2	13.9	151	0.55	17.1
16	16	Ralsins	Case, Carton	10	12	16	52.1	43.0	180	0.65	34.9
17	17	Distilled Spirits	Case, Carton	10	12	16	68.5	32.7	177	0,64	37.7
18	18	Coffee, Rossted	Carton	11	14	16	88.5	25.3	101	0.37	31.9
21	21	Beer	Carton	8	12	17	61.2	36.6	487	1.77	15.1
25	25	Detergents	Carton	12	17	17	119.1	18.8	412	1.50	31.3
264	26	Milk, Evaporated	Carton	9	13	18	43.8	51.1	1751	6.36	29.1
26b	26	Fish, Canned	Case	9	13	18	45.5	49.2	132	0.48	35.1
28	28	Fish, Canned	Case	10	13	19	45.3	49.4	242	0.88	38.8
29	29	Milk, Dried, Non-Fat	Case	10	15	20	55.3	40.5	623	2.26	31.7
33	33	Natts and Spikes	Keg	21	12	12	30.3	73.9	381	1.38	19.5
36	36	Cigarettes	Carton, Case	23	11	16	123.8	18.1	797	2.89	18.0
38 a	38	Taploca Flour	Bag	10	14	24	54.9	40.8	158	0.57	21.3
38P	38	Peanuts, Shelled	Case	10	14	24	67.3	33.3	1606	5.83	18.7
39	39	Sanitary Food Containers	Carton	13	15	24	82.1	27.3	117	0.43	28.2
44	44	United States Mail	8 <b>e</b> g	10	18	29	185.1	12.1	1390	5.05	23.0
45	45	Shipping Containers	Bundle	21	21	29	151.4	14.8	219	0.80	16.9
46	46	Tires	Piece	5	29	29	175.0	12.8	1116	4.05	18.1
47	47	Paper Bags	Bundle	10	16	30	108,7	20.6	114	0.41	17.5
49	49	Coconut Meat, Shredded	Bag	10	17	36	68.1	32.9	978	3.55	19.6
52	52	Bamboo Baskets	Bundle	46	30	34	176.4	12.7	335	1.22	21.1
54	54	Woven Goods, Synthetic	Cose	16	28	48	82.1	27.3	928	3.01	23.4







- 6. Less paperwork all along the line;
- Reduction in number of handlings for each package;
- Availability of containers at destination for temporary storage, housing and even field offices;
- Easier customers checking, particularly at European borders;
- Modification of external characteristics of cargo for more efficient handling;
- From a military standpoint . . . a reduction in volume of shipping required because losses from damage, pilferage and enemy action are minimized;
- 12. From labor's viewpoint containers could be desirable because men can be working at loading and unloading containers even when ships are not in port, thereby levelling peak work loads and stabilizing employment;
- 13. Ideal for handling passengers' baggage;
- 14. Ideal for handling mail;
- Sales appeal to shippers, gives competitive advantage to transportation companies providing them.

Disadvantages claimed for containers can be summarized as follows:

- 1. Cost of containers:
- Tare weight of containers adds to shipping costs;
- Loss of cubage in the containers and in the carrier used to transport containers;
- 4. Cost of returning empties;
- 5. Necessity for mechanical equipment for handling.
- 6. Institutional difficulties (i.e. labor practices);
- 7. Accountability for containers;
- 8. High rail rates (rates in the United States are

presently based on highest rated commodities in the containers).

A research project, sponsored by the Office of Naval Research, United States Department of the Navy, has demonstrated how the economic advantage or disadvantage of containerization varies from commodity to commodity. Figures 1 and 2 refer to the economies of containerization compared with palletization. The savings and losses indices shown were determined for three different size containers. For each size container a determination was made for situations where the maximum permissable weight limit on the ship's boom was 6000 pounds, and another determination for cases where the limit was assumed to be 12,000 pounds.

The intent was to demonstrate the desirability of beefing up the booms to carry heavier lifts per load and thereby increase productivity. The economic advantages of heavier load lifts is portrayed in Figure 3.

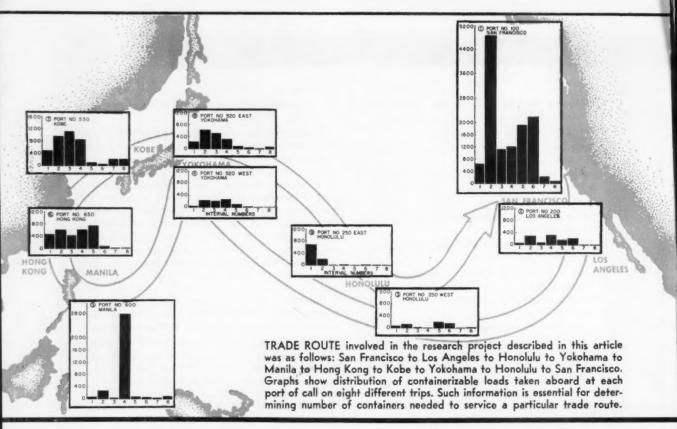
The savings and losses indices suggest the concept of a containerization priority index by commodity. If an operating man knew these indices for all containerizable commodities he would be able to rationally decide the order in which commodities should be assigned to containers.

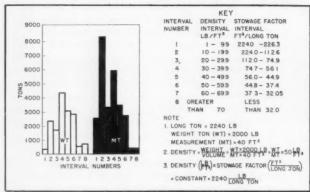
The factors considered in the above mentioned economic analysis were: differences in loading rates or ship turn-around time; stowage space losses in ships due to containers; costs of containers. Data on pilferage and damage losses were not available and therefore not included. Since these losses are considerable, and since they are greatly reduced if not eliminated by containers, the estimated savings shown in Figure 3 for different levels of containerization are conservative. The percent return on investment in containers, shown in that illustration, augurs well for containerization.

The potential dollar savings of containerization are staggering. People in the shipping industry believe that this concept represents the most promising innovation in the worldwide shipping industry.



Joseph D. Carrabino is Associate Professor of Production Management, Graduate School of Business Administration and Associate Research Engineer, College of Engineering, University of California. He has served as a member of the National Panel of Arbitrators, American Arbitration Association; ordnance engineer and patent advisor, United States Naval Ordnance Laboratory; industrial engineer and assistant to the plant manager, H. H. Brown Shoe Co. Among his degrees is a Ph. D. in engineering from the University of California.

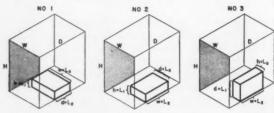




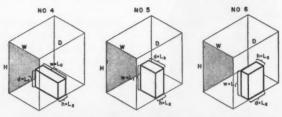
DISTRIBUTION of weight-ton and measurement-ton totals for the eight voyages for different density and stowage factor intervals. Binodal nature of the distributions suggest a two-size container system would be appropriate for this trade route.



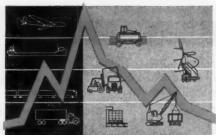
TYPICAL CONTAINER used by American President Lines for shipment of cargo. By homogenizing cargo, they simplify handling and reduce vessel turn-around time.



SIX INITIAL ORIENTATIONS of a package in a shipping container are possible if the package contains a commodity which does not restrict position. For



example, if a given package contains glassware and must be loaded "this side up" its position will be greatly restricted and only loading patterns 1 and 2 will apply.



## Containerization of Marine Cargo

#### **II Determining Proper Sizes**

How different size commodity packages fit into different size shipping containers . . . a complex question with a complex answer. Here's how a high-speed digital computer was used for determining optimum sizes.

ANAGEMENT in the shipping industry needs the kind of "mental revolution" which has taken place in manufacturing industries under the impact of scientific management philosophies and techniques. If the Naval research program which is the basis of this article does no more than demonstrate benefits which are sure to result from analytical techniques in solving operational problems it will have fulfilled a critical requirement.

The procedures developed in the program for determining best sizes of bulk shipping containers—to suit a specific type carrier over a specific trade route—can be adapted to general applications.

For full exploitation of the benefits of containerization there should be standardization of sizes. At first, for short run benefits, such standardization is necessary within the shipping industry. Ultimately, a national container system will probably evolve with size standardization agreed upon by all types of carriers and shippers. (Ed. note: For a complete discussion on container standardization see page 88).

We would recommend that shippers embark initially on one-size container systems which may in time grow into multiple-size systems.

#### Practical Approach Used

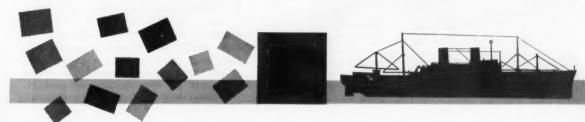
In our research program a practical approach, using operations analysis methods, was employed to develop procedures for determining optimum shipping container sizes.

Arrangements were made with the American President Lines in San Francisco to use actual performance data for all commodities which were shipped over a typical trade route by two sister ships on a total of eight consecutive voyages. A voyage consisted of a round trip from San Francisco to Los Angeles, to Honolulu, to Yokohama, to Manila, to Hong Kong, to Kobe, to Yokohama, to Honolulu, back to San Francisco. Four trips were made by each ship during six months operation. In other words, the complete study covered the equivalent of one year of operation for one ship.

#### Variables Affecting Sizes

Dominant variables affecting container sizes were found to be:

 Weight-ton and measurement-ton distributions of all physically containerizable commodities for

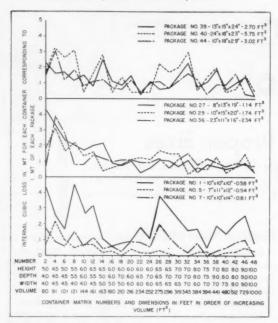


NOVEMBER, 1957

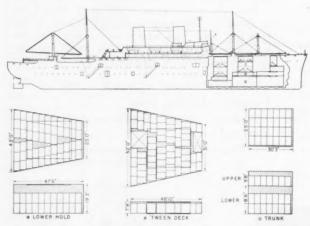


- different density and stowage factor intervals.

  2. The fit of different size packages into different
- size containers. Here a unique application of a high-speed digital computer was made, using simulation techniques.
- The fit of different size containers into all the storage compartments of the two ships. This was made easier by use of scaled layouts.



INTERNAL CUBIC LOSSES of containers of increasing volume for different package sizes, It was found that loss variation had a periodic-like pattern.



PROFILE of the three hatches available for dry cargo stowage on ships analyzed. Scaled layouts of stowage compartments and scaled templets of 15 different size containers were used to determine stowage losses resulting from containerization.

 Truck and railroad car sizes. Information for use in studying this variable was obtained from field trips.

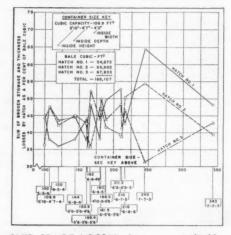
#### **Density Distribution of Commodities**

It seems to be universal practice among operating personnel in the marine shipping industry never to lift more than three tons on a ship's boom (rated at five tons) without special rigging. This rule of thumb is adhered to tenaciously in order to minimize accident hazards. Therefore, since the weight of a load is fixed at this upper limit, it is essential to know the range of densities of commodities to be handled to determine the desirable volume ranges of containers.

The data for the eight voyages involved a total of 1366 different commodities. For each, the following information was included: voyage number, port of loading, port of discharge, revenue dollars earned, weight-tons, measurement-tons, density and stowage factor. They were grouped for like commodities. Not all of the 1366 were suitable for containerization. Thus, it was necessary to develop criteria for selecting those which might be physically containerizable. It was found that 861 commodities, 63% of the total, met these criteria. They represented 48% of the total revenue earned.

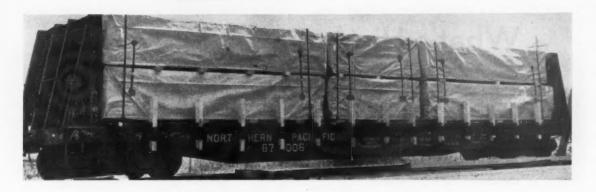
One of the disadvantages of containerization is the loss of cubage in the container: you can never achieve perfect stowage of different size packages in a given size container. To measure the size of this loss a simulation technique on a high-speed digital computer was employed. The objective: to determine what the internal cubic loss would be in different size containers for packages of different sizes.

#### (Continued on page 156)



SHIP SPACE LOSSES show a periodic-like variation, similar to cubic losses in containers, as size of container increases. High losses show need for ships specially designed to accommodate the bulk shipping containers.





Paper Covered Lumber Insures . . .

## 1st Class Shipping at 2nd Class Rates

BETTER-GRADE lumber, which usually travels to market like an aristocrat, in boxcars, will probably be riding on open flatcars in the future. You can look for lower lumber distribution costs as a result.

The road was cleared for the less expensive shipping method when the Association of American Railroads approved flatcar shipment of packaged lumber in its Regulation 9-B. AAR's approval has been attributed to greater product protection through improved banding techniques and development of sturdy, economical paper covers.

The first commercial shipment was received recently by the Erie Railroad Co. at its Susquehanna, Pa. yards. It consisted of 12 gigantic packages of 1 x 6 tongueand-groove car lining boards purchased from a West Coast mill.

Each package was made up of four courses which were 12 boards high and 9 boards wide. The courses were separated by 1 x 2 spacers (stickers) and the entire unit was bound together with steel strapping. The function of the spacers is not merely to separate the courses, but to cause a sag or "wave" to boards in the banded load. Thus, boards exert friction upon themselves, preventing telescoping. Approximate finished size of the packages was 124 x 54 x 43 inches and 224 x 54 x 43 inches.

Covers are made of two plies of heavy wet-strength, asphalt-laminated kraft paper, reinforced with fiber

glass scrim. They are constructed with double tops (to provide protection during extended storage) and reinforcement on edges and corners (to prevent

(Continued on page 169)



FORK TRUCK lifts paper-covered package of highquality lumber onto flat car. The completed load will contain eight 18-foot and four 10-foot packages. After second tier is loaded, steel band (shown running through center of bottom tier) will pull the two tiers together. Note package waiting for cover at right.



## What's Hindering Easy Container Interchange?

By Herbert H. Hall

Material Handling Engineer, Aluminum Company of America

EVELOPMENT of standardized containers fully interchangeable among all shippers and carriers can go a long way to reduce distribution costs.

Progress has been made, but is could be accelerated if transportation lines—especially railroads—would make a concentrated effort to work together for the good of our national economy. What is being done and the next logical steps are developed in this discussion.

#### Standardized Pallets

An American Standards association committee on pallets has recently submitted a preliminary recommendation for ten standard sizes. Included are four particularly suitable for interchange among carriers. Those including the dimensions of 48 or 32 inches can be handled efficiently in standard box cars two or three abreast. Those with a 40 inch dimension are especially good for stowing two abreast in highway vans.

The four recommended standard sizes—32 x 24, 40 x 32, 48 x 40, and 72 x 48—represent a wide range of capacities. Besides meeting most shipping requirements, they are also suitable for interchange between highway, railroad, marine, and air carriers.

The 48 x 40 pallet has been a popular standard used by the armed services and many industries. The 40 x 32 is used generally when a smaller unit or a lighter load is desired. The 32 x 24 has been a standard for handling brick and, principally, where smaller unit loads are preferred, usually for handling high-density materials. The 72 x 48 pallet is used extensively as a standard size in marine terminals and aboard ship where a larger unit is needed; it is generally referred to as a "stevedore pallet."

The standard box car recommended by the Association of American Railroads has an inside width of 9 feet 2 inches, inside height of about 10½ feet. In recent years, so many box cars have been built to these specifications that it is possible, on most of the large railroads, to depend on getting these large-capacity cars for shipping unitized loads.

There is also a trend towards large-volume vans with inside widths of 90 inches or more, heights of 88 inches and up. Although most highway vans being built today meet these inside specifications, a large percentage of vans still in service have narrower widths at the doors or are lower in height. With the gradual scrapping of the old undersize box cars and highway vans, the new large standard cars and vans soon will be universally available. In most of the large manufacturing areas today it is possible to get the large equipment when needed.

A factual and frank discussion of great concern to all firms shipping via public carriers. Few men, if any, have had the experience of the author and can speak with his authority. (He is a founder of the American Material Handling Society and current Chairman of the Technical Division of the AMHS National Board.) Here, he gives you advantages and disadvantages of various methods and, though some toes may be hurt, shows what logically should be developed for full interchangeability of containers among all carriers and the effects upon your shipping costs. This article has been prepared from a paper delivered by Mr. Hall at the recent San Francisco meeting of the American Society of Mechanical Engineers.

For palletized unit loads of cartons, cases or boxes, outside dimensions of load should approximate pallet dimensions, preferably the same or slightly larger.

In a great percentage of cases, size of individual units is fixed, and they cannot be stacked in a pattern corresponding exactly to the size of the standard pallet. When considering the standard inside widths of 90 and 110 inches for vans and box cars, a sub-

stantial overhang of the load is permissible. The U. S. Naval Supply Research and Development Facility at the Naval Supply Depot in Bayonne, N. J., recently established a practice for determining permissible stacking arrangements for the standard  $48 \times 40$  pallet. It allows an overhang of 2 inches on the ends and  $1\frac{1}{2}$  inches on the sides. This limiting size of  $52 \times 43$  inches was considered 100 percent utilization of allow-

(More on next page)

Dime	ncions		Capacit	ies			Outside	Approximate
Outside	Inside	Cu. Ft.	Pallets	Conteiners	Container		Dimensions	Capacity Ca. Ft
Small Pallet Co.	-3 wide in Va	ın, 3 wide	in Boxcar,	I" wall				
			Inches		Small Bulk Pallet	Container	36x29x60 36x29x84	25 35
36x29x28	34x27x23	12.2	4-32x24					35
36x29x40	34x27x35	18.6	7-32x24		Medium Bulk Pa	lief Container	44x36x60 44x36x84	50
36x29x60 36x29x84	34x27x54 34x27x78	28.6 41.4	10-32x24 15-32x24					
					Large Bulk Palle	Container	54x44x60 54x44x84	50 75
Medium Pallet (			THE PERSON NAMED IN	car, 172 was	Stavedore Bulk P	allet Container	78x54x60	85
44x36x28 44x36x40	41x33x22.5 41x33x34.5	17.6	3-40x32 5-40x32	or 1-36x29x28			78x54x84	120
44x36x60	41x33x53	41.5		or 1-36x29x40	Small Bulk Carg	o Container	96x56x84	150
44x36x84	41x33x77	60.2	12-40x32	or 1-36x29x60	Smell bulk Cary	Container	96x56x100	190
Large Pallet Co	n.—2 wide in	Van, 2 w	ride in Boxo	er, 11/2" well	Large Bulk Carg	o Container	112x96x84	300
54x44x28	51x41x22.5	27.2	3-48x40				112x96x100	370
54x44x40	51x41x34.5	41.7	5-48×40	or 1-44x36x28				
54x44x60	51x41x53	64.		or 1-44x36x40				
54x44x84	Six4ix77	93.	20021000	or 1-44x36x60				
Stevedore Pallet	Con,-1 wide	in Van,	2 wide in B	oxcar, 2" wall				
78x54x28	74x50x22	41.	4-48x40					
78x54x40 78x54x60	74x50x34 74x50x52	67.		or 1-54x44x28 or 1-54x44x40		TABLE	4	
78x54x84	74x50x76	149.		or 1-54x44x60		ocsed Standard Si		
Small Jumbo Pa					Dimen		Capac	-
88x44x20	84x40x22	42.7	6-48x40					
88x44x42	84x40x34	70.	10-48x40		Outside	Inside	Cu. Ft. No. c	The state of the s
88x44x63 88x44x84	84x40x52 84x40x76	107.	16-48x40 24-48x40		8 Ft. Van Conta	iners, 8 long on	75' Flat Car-3'	Wall Thickne
1-07/5/19		147.			8'x95"x100"	71/2'x90"x88"	412	6-36"x29"x84
Large Jumbo P								4-44"x36"x84
88x88x42	84x84x36	147.	20-48x40		11 Ft. Van Conte	iners, 6 long on	75' Flet Car-3"	Well Thickne
88x88x63 88x88x84	84x84x55 84x84x76	225. 310.	32-48x40 48-48x40		11'x96"x100"	101/2'x90"x88"	576	9-36"x29"x84
								6-44"x36"x84
Inside dimensio	THE RESERVE OF THE PERSON NAMED IN							4-54"x44"x84
28 and 40 in. h	igh have open	top and	a base b	to 6 in. high.	17 Ft. Van Conta	iners, 4 long on	75' Flat Car-3"	Wall Thicknes
					17'x96"x100"	161/2'x90"x88"	906	15-36"x29"x84
1042	TA	BLE 2						10-44"x36"x84 6-54"x44"x84
Proposed	Maximum Carg	o Contai	iner Standa	rd Sizes				
Dime	nsions	The same	Capacit	ies	23 Ft. Van Conte	Market Market St.		Wall Thickne
Outside	Inside	Cu	. Ft.	Pallots	23'x96"x100"	221/2'x90"x88"	1240	24-36"x29"x84
Small Cargo C	ontainers.2 wid	e in Go	ndola-21/2"	well thickness				16-44"x36"x84 10-54"x44"x84
CONTRACTOR OF THE PARTY OF	DISTRICT SHAPE	DESCRIPTION OF	SOCIED BUSINESS					5-78"x54"x84
96x56x84 96x56x100	91x51x7 91x51x8		193. 236.	26-48x40 30-48x40	34 Ft. Van Conta	iners 2 long es	75' Flat Car-3"	
Large Cargo C					34'x96"x100"	331/2'x90"x88"		33-36"x29"x84
ATTENDED TO STATE OF THE PARTY	CHARLES SEALS IN	STATISTICS.				20// 2/0 200	1000	22-44"x36"x8-
112x96x84	107x91x7		405. 495.	52-48x40 60-48x40				14-54"x44"x8- 7-78"x54"x8-
	107x91x8	A PROPERTY AND REAL PROPERTY A	The state of the s	99-19216				/*/0 139 15

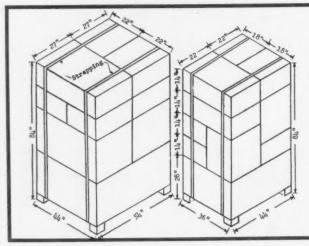


FIG. 1 Modular system of small interlocking boxes assembled into standard pallet containers:

54x44" Pallet Containers

54x44x28" high unit incl. base\*44x36x28" high unit incl. base\*

54x44x14 or 28" modular units

44x27x14 or 28" modular units

36x22x14 or 28" modular units

22x22x14 or 28" modular units

\* Base sections are standard size pallet containers.

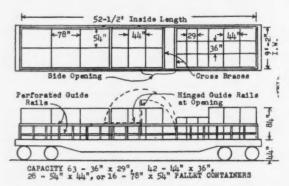


FIG. 2 Weatherproof bulk pallet containers in 70-ton 521/2 ft. gondola container car. Capacity: 63-36x29", 42-44x36", 28-54x44", or 16-78x54" pallet containers.

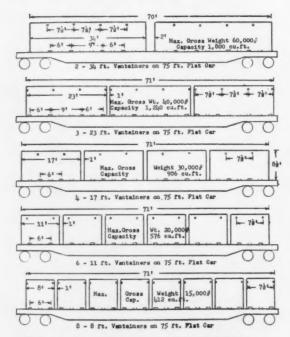


FIG. 3 Arrangement of vantainers on 60 ton, 75 ft flat car.

#### What's Hindering Easy

able space. These increased dimensions of the pallet load still left sufficient clearance in box cars 110 inches wide and vans 90 inches wide for some inaccurate stacking and possible leaning of the palletized load.

#### Shipping Containers—Pro And Con

Although it s usually satisfactory to ship most packaged goods in strapped or glued unit loads, there are many shipments of valuable or fragile items, bulk materials, or those requiring transfer from one type of carrier to another, where use of shipping containers is justified or required. Following are principal advantages and disadvantages in the use of shipping containers:

#### Advantages

- 1. Shipment from points of origin to destination in undisturbed sealed units.
- 2. Reduction of labor, time and cost in loading, stowing and unloading carriers,
- Substantial reduction of packing cost and packing and material requirements.
  - 4. Reduction of physical damage.
  - 5. Reduction of contamination from outside source.
  - 6. Almost total elimination of loss by pilferage.
- Avoidance of costs and delays in rehandling separate shipments at transfer points and elimination of chances for mixup or loss of shipments.
- Big reduction in paper work as detailed shipping lists and in-transit checking are eliminated.
- 9. Reduction in insurance costs as result of lower liability to claims coming from pilferage, contamination, breakage or loss.

(Continued on page 120)

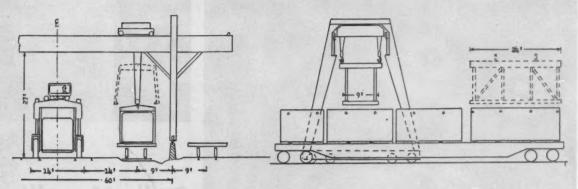


FIG. 6 Arrangement for handling all sizes of vantainers by gantry crane with grab.

#### Container Interchange?



a. C.O.E. Tractor-Semi Trailer with 34-ft. Vantainor (45 ft.)



b. Long Wheel Base Tractor-Semi Trailer with two 17-ft. Vantainers (60 ft.)



c. P.I.E. Dromedary Tractor-Semi Trailer Rig with 11-ft. and 34-ft. Vantainers (60 ft.)



d. Western Doubles Rig with Truck-Full Trailer with two 23-ft. Ventainer (60 ft.)



e, Western Doubles Rig with Semi and Full Trailer with 23-ft. and two 11-ft. Vantainers (60 ft.)



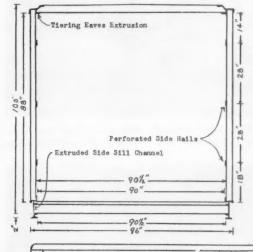
f. Tractor-Semi Trailer with 17-ft. Ventainer





g. Truck with two 8-ft. Ventainers h. Truck with 11-ft. Ventainer

FIG. 4 Vantainers mounted on truck and trailer chassis.



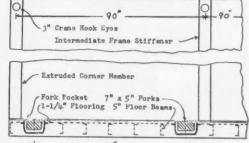
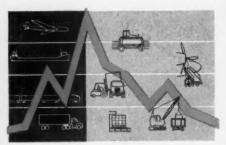


FIG. 5 Cross section and elevation of aluminum vantainer.





## **Bulk Handling**

**Modern Distribution** 

NINE STORAGE BINS, at the Crockett processing plant can handle a total of 110,000 tons of sugar. This storage is necessary to maintain sufficient processing supplies because of fluctuating transportation schedules.



TRUCK AND TRAILER RIG carry bulk raw sugar from the plantation to storage facilities at Honolulu.



MATERIAL THROWER sprays raw sugar into ships hold. Belt conveyors deliver the sugar to thrower.



CLAMSHELL BUCKET, 3500 pound capacity, transfers sugar from silo to sectional discharge tubes.

## Boosts Hawaiian Sugar Industry

Methods Keep Prices Competitive

ACH YEAR the Hawaiian sugar industry ships over a million tons of raw sugar to mainland U. S. A. The combined shipping and handling of this sugar is a big, expensive operation. It involves principally, three areas: (1) from the plantation to dock-side storage; (2) loading ships; and (3) unloading ships.

Mechanization of handling in these areas has held the future of the Hawaiian sugar industry. Here's why: (1) Sugar from the beet and cane areas of the states as well as from Puerto Rico and Cuba does not have to be shipped 2400 miles for refining; (2) Wage rates are higher in Hawaii; and (3) Older handling systems were expensive and out-of-date. As a result, Hawaiian sugar could not compete pricewise.

The industry had to cut costs, the biggest item of which was handling. They were handling the raw sugar in 100-pound burlap bags. It was a slow process requiring a lot of manpower, and a lot of bags.

Sugar industry leaders saw that grain, gravel and other similar materials were handled in bulk, with no bags and almost no manpower. They were convinced that merchandised bulk handling could be used for raw sugar. It would cut handling costs and keep them in business because:

- It would eliminate the cost of bags, and of filling them.
- 2. It would reduce overall handling costs.
- 3. It would not waste any steamer cargo space.
- 4. It would reduce loading and unloading time.
- 5. It would eliminate unnecessary personnel.

#### Specials For Bulk Handling Sugar

Since it is a commodity of comparatively high value

per pound, sugar handling requires extreme precautions to prevent any loss or waste. It must be weighed and sampled with utmost care on entering and leaving storage plants. Financial returns to the owner plantation are made on a basis of analysis showing sucrose content on each shipment.

Storage facilities had to be available at the island ports because of fluctuating transportation schedules. Also, extensive storage capacity was needed at the Crockett, California, processing plant to maintain sufficient supplies for use when no steamers were docked.

#### How The System Works

The fleet of twelve cargo vessels used in the movement of the raw sugar from Hawaii to California have not required any extensive alterations or additions. The lower holds, generally, are used for the bulk shipments. Solid wood sheathing keeps sugar away from the hull. Eye bolts, installed at numerous points, anchor blocks which carry cables operating dragline buckets to pull the sugar from back sections to the bucket elevator that hoists it out of the hold.

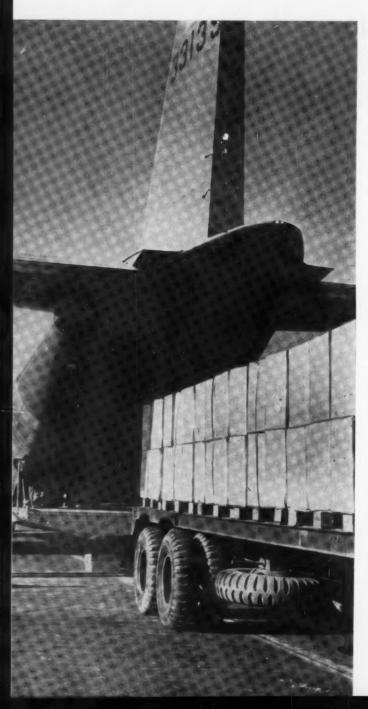
#### Flat Floor Type Warehouses

A flat-floor construction was used for the first three port installations,

In these plants, raw sugar is delivered to storage bins by overhead conveyor belt. For shipment discharge, a subfloor conveyor carries the sugar to the steamer holds. Most of the sugar flows by gravity through gate openings in the floor, designed to regulate the rate of flow. Large motorized shovels move accumulated surplus from the periphery to the gate

(Continued on Page 170)





## Can You Use

THERE'S a very good chance that air freight can help reduce your costs—and an even bigger chance that you're overlooking its possibilities.

Alert business executives have discovered that shipping by air has helped to wring more profits out of their operating capital and open up new sales areas. In many cases, they have been able to reduce the investment needed to finance their operations and to do more business without increasing their investment. A good many have parlayed this way of doing business in less time into healthy increases in both percentages and amounts of profits.

How it works and how it can be used to benefit any business are two of the least understood but most important aspects of air freight.

Take the old saying, for example: "If it's small and light, ship by air. If it's large and heavy, ship by surface." This rule might have been true 15 years ago when the DC-3 was just about the biggest airplane in wide service, but it certainly isn't generally true today. Some of our new cargo planes can carry up to 30,000 pounds.

There are perhaps four big reasons why air freight isn't more widely used:

1. For years, airplane people and potential shippers have been waiting for a "dream plane", living in a cloud of wishful thinking that any day an all-purpose air freighter would appear. It would cost nothing to operate, and it would solve everybody's air freight problems.

2. There is a lack of understanding as to what types of goods an airplane can carry.

3. There is too much emphasis on selling air

CARGO on pallets can be slipped into air freighter in a matter of minutes.



GIANT AIRLINERS making about 10,212 daily flight departures speed air express shipments coast to coast.



HELICOPTERS have been expediting the handling and distribution of shipments to dozens of eastern cities.

## Air Freight to Cut Costs?

freight to shippers as an emergency service.

4. Most important, people fail to look at air freight as a source of new profit through the lowering of other distribution costs and through increasing the use of capital. Too often air freight is viewed as transportation cost alone without thinking of its influence on other cost elements such as warehousing, inventories, or packaging.

Now, let's take these things one at a time.

First, the "dream plane". Maybe some day an ideal air freighter with very low operating costs will be put into service; but there isn't one right now. And there's no point to waiting for one, because today's planes can be used for air freight today and with benefit to airline revenues and business profits.

The second point, a widespread lack of understanding of the airplane's ability to carry a wide variety of things has greatly retarded the use of air freight. Many shippers don't use air freight today because they simply don't realize what it can offer.

The wide spread error that air freight is for emergency shipments stems from the fact that many shippers always associate an airplane's speed with emergencies, something to use only to get things there in a hurry. A better attitude is to regard air freight as an everyday, first-class, regular service and to forget about how it was shipped traditionally.

Point four, air freight rates are generally higher than surface rates (altho some are cheaper), but the air freights contribution to the reduction of other distribution costs may enable it to add to profits on an everyday basis.

Take packaging as an example. The higher costs of packing a shipment for surface transport may more than eat up the little you'll save in freight shipping by surface instead of by air. Insurance is another

example. The speed of air transport cuts down on insurance costs because of the shorter time involved in transit. Less pilferage is another obvious advantage.

Still another example of how air freight cuts distribution costs is the fact that air freight permits lower inventories. Money formerly required for inventory can be used to benefit the business in other ways—on more promotion or in generating new markets.

That air freight can reduce inventories and hence affect profits is a known fact. However, almost no attention has been paid to how air freight can speed up the rate of return on dollar investment.

If for example, a firm's earnings, as a percentage of sales, are 7 percent, multiplied by a turnover of 4 with surface transportation; it would have a return on investment of 28 percent. However, if an air freight distribution program increased transportation expenses enough to reduce earnings to 6 percent but also gave a faster turnover of 5, the rate of return on investment would be 30 percent. In other words, the lower return would be more than offset by the increased turnover.

What steps can you take to see whether air freight will increase your business profits and help cut costs? These might help:

Regardless of past thinking, be aware that air freight may hold profit possibilities for your company.
 Remember that even as a transportation cost, air freight may cost less than surface transportation.
 Learn to look at air freight not as just a transportation.

(3) Learn to look at air freight not as just a transportation cost but as a means of cutting other distribution costs.

(4) Discuss your distribution with an air freight specialist to see if shipping by air can mean more profits for your business.

Information courtesy Stuart G. Tipton. Air Transport Assoc. of America.





# A Lift For Rapid Mail Dispatching

MECHANIZED mail handling has enabled Great Northern Railroad's Cascade Division, Seattle, Washington, to effect rigid "on time" schedules at mail transfer and distribution points like Everett and Mt. Vernon.

Station delays for loading and unloading of mail formerly requiring 25 to 45 minutes have been eliminated.

All mail is sorted and placed in conventional mail sacks—the sacks are then sorted according to destination and placed in collapsible wire pallet boxes. Each wire box holds 20 to 25 bags of mail weighing approximately 1500 pounds.



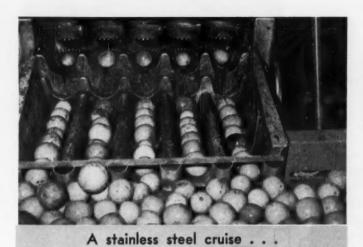
EMPTY BASKETS, when not in use, are collapsed to take up less storage space and carried by fork truck.

Fork trucks, 2000 pound capacity units on pneumatic tires, are used to handle the boxes. A complete mail storage car containing 18 wire boxes can be loaded or unloaded in 12 minutes.

The system makes possible the handling of a large volume of mail in short station time and has eliminated entirely the need for a set-out car which was formerly dropped on the north bound run in the morning and picked up again on the return that night. This meant that the passing track was blocked for about 10 hours every day. With the new system the car remains with the train, there is no station delay and the road saves switching time and costs.



WIRE PALLET BOXES can be easily maneuvered to the door opening for fast unloading by fork truck.





CONTROLLING DISTRIBUTION COSTS

Investment in Shipping-

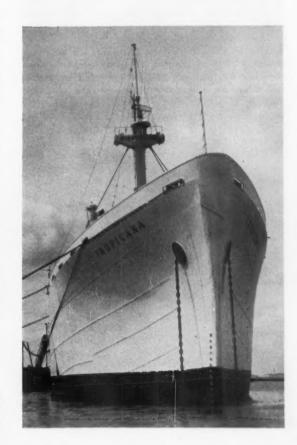
## Orange Juice Tanker Pays Off

A strange tanker plows the seas between Florida and Long Island. She has innards of stainless steel filled with fresh orange juice. She is the S. S. Tropicana — the only fruit juice tanker in the world.

The Tropicana represents a heavy investment in shipping for her owner, Fruit Industries, Inc. But it's an investment that pays dividends on every trip by solving a big and tough distribution problem. The big ship (now 650,000 gallons—soon to be 1,450,000) hauls orange juice up the coast in 56 hours—keeping it cold and under vacuum so that none of its freshly squeezed flavor is lost.

Juice is pumped aboard through 4-inch stainless steel pipes into stainless tanks 60 feet long and 8 feet in diameter. These vacuum tanks are insulated with  $6\frac{1}{2}$  inches of foam glass to keep the temperature a cool 28-30 degrees. White marine enamel on the hull and superstructure help keep the temperature down by reflecting the sun's rays.

When the Tropicana is equipped for full capacity she will carry a cargo that would require 217 refrigerated trucks. To transport 1½ million gallons of orange juice by truck from Florida to New York would cost \$265,000. The Tropicana can do it for \$15,000. Saved: a robust \$¼-million per trip!



... \$1/4-million saved





ANDLING the materials which make up a major paper distributorship is a complex problem. Single shipments, identically routed and handled, may vary in weight all the way from 10 to 1000 pounds.

These facts had to be taken into consideration in making up the material flow plans for the huge distributing plant of Dixon & Company, Denver. When the plant was planned, its goal was maximum economy, reliability, elimination of unnecessary personnel, and smooth, overall movement of merchandise throughout the 90,000 square-foot building.

After considering a variety of methods for shuttling loads throughout the building's 60 stock bays, Dixon determined that an in-floor conveyor system, circulating throughout the plant, would provide as nearly automatic a flow of materials as possible. Combined with an electronic signaling system, this system makes each bay and each shipping and receiving department depots along a miniature railroad system.

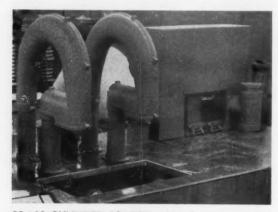
The conveying system runs 1100 feet throughout the warehouse area. It is equipped with a fleet of 160 four-wheel carts that detach and attach swiftly to the tow chain mounted in a steel-rimmed slot in the floor.

On leaving the center-front dispatch section, each cart slowly passes every storage bay. The cycle is completed in approximately seven minutes—unless the cart is removed. A turn of the crank mounted on the coupling mechanism at the lower front of the cart removes the cart.

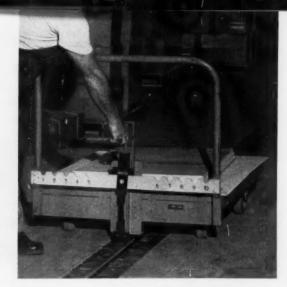
Ten numbered slots across the front of each cart provide ten spaces through which an iron bar, with a copper roller tip, can be dropped. The roller, at the



DOCK LEVELERS, manually operated, adjust to the height of any truck bed and simplify truck loading.



BRASS CYLINDER "CARS" rush orders between departments connected by a pneumatic tube system.



ELECTRIC CONTROL, which signals arrival of cart, can be set for any of ten stock or shipping stations.

## Railroad Depot

tip of the bar, serves as an electric contact; as the carts roll along, according to spacing across the front of the truck, it contacts a copper button set in the floor. A bell rings and gives 45 seconds warning to the bay for which it is assigned.

Here's How The System Works: Fork trucks unload the material from boxcars and carry it to the various bays. An order is received by the central order department office. A triplicate invoice is made out and attached to a clip at the front of a cart. At the same time the rod is slipped into the proper slot so that, as the cart circles the conveying system, it will arrive at the bay from which the merchandise will be extracted. As the cart nears the bay, a bell rings, alerting the employee to detach the cart from the line, fill the order, place the merchandise on the cart, replace it on the line, and set the rod for the next bay or shippment department. The orders are checked at the central shipping office and are then rolled directly to the truck docks for shipping.

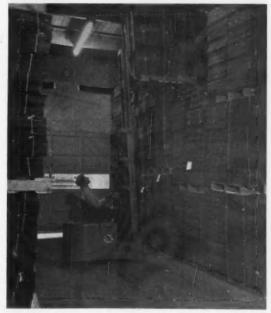
The eight truck docks are equipped with dock levelers, manually-operated steel deck platforms which can be adjusted to the exact height of the truck. This lets the lift trucks roll easily in and out, eliminating hand lifting and shoving of heavy cartons.

#### Order Department Also Automatic

The same automatic movement is displayed in the order department, interconnected with the various offices by pneumatic tube systems. The brass cylinder "cars" used here rush orders and instructions between various offices and warehouse points. Backing it up is an automatic dial telephone system, which enables quick verbal contact between all departments.



LOADED CARTS circle the plant enroute to the shipping dock. Normally they are much farther apart.



FORK TRUCKS transport incoming loads to the proper bay—they are stacked ceiling high on pallets.



MODERN WAREHOUSE covers 51/2 acres, ships 500 tons of food daily. Latest techniques are used. The firm formerly used an outmoded multistory building.



A Groceryman's Dream . . .

## Streamlined Food Distribution

VERY AVAILABLE ECONOMY was designed into the San Francisco warehouse of S & W Fine Foods, Inc. The result is grocery distribution that is systemized into low-cost, high-speed deliveries to customers.

S & W serves the Northern California market. Its warehouse is capable of handling more than a half million cases of merchandise. It currently sends out orders totaling some 500 tons daily.

The 240,000 square foot building has a concrete floor consisting of a six-inch base slab topped with ¾-inch of dense, heavy-duty concrete. It has a 700-foot canopy-enclosed loading dock that accommodates 65 trucks. Spotlights on flexible mounts light each truck for night loading. There is also a 10-car rail spur.

The streamlined system divides the vast storage area into numbered city-like blocks. Commodities have specific addresses along wide (11-foot) traffic lanes. A through-lane spans the entire warehouse from truck dock on the east to rail spur at west.

Steel order selection racks ajoin the truck shipping sections. These are three tiers high. The lower and



TWO-WAY RADIO is standard equipment on all fork trucks and tractors, serves as monitor of activities throughout the warehouse. Radios are low-powered, battery operated, broadcast on 25-50 megacycle band.





FORK TRUCKS (above) move palletized loads from tractor trains to storage in receiving operations during the day. At night outgoing shipments are loaded into trucks (lower photo). This avoids traffic jams.

middle tiers are for active goods and the top for storage at hand.

Blocks of bulk storage stacks are next to the steel racks. Stacks within these blocks are arranged in floor patterns of 3x3 or 3x4 pallets. They are stacked four high. The greater the activity of the commodity, the closer its stack to the racks.

Traffic flows in a predetermined course, in assembly line order. The course is charted by a versatile punched card system. Pre-punched commodity cards guide vehicles to the permanent warehouse address of each commodity. The result is a traffic system that avoids backtracking and tying up equipment.

The plan combines tractor trains and fork trucks, and standard 40x48-inch pallets. There are seven electric high-lift fork trucks, and 22 tractors—also electric.

Communications throughout the warehouse are designed to speed order-filling. Fork trucks and tractors are all equipped with two-way radios, so they can be in touch with control stations where paperwork is processed. A pneumatic tube system speeds paperwork between these stations and the administration section. Actual processing of the orders, invoices, traffic data, etc. is done by a battery of electronic accounting machines. These also chart and control the circuits of the wide variety of materials.

All operations are on a 2-shift basis. There are only three or four supervisory personnel, plus a 60-man day shift and 27-man night shift. During the day shift receiving, sorting and storing of incoming goods is accomplished. Order selection and truck loading is done at night. In this way traffic jams and congestion are reduced to a minimum.

When merchandise is received, truck drivers unload the cases onto pallets aboard four-wheel hand trucks. Checkers mark each load with its "address". Then the hand trailers are coupled into trains and whisked to their storage areas. Here the trailers are uncoupled, and the empty ones from the previous trip are coupled and returned. At the storage areas fork trucks lift the loaded pallets off the trailers and lift them into their proper racks.

Order assembly is done mostly by tractor trailer (Continued on Page 168)



RECEIVING DOCK is enclosed and overhead doors are radio controlled.



UNIT LOADS are transported to steel storage racks by industrial fork trucks.





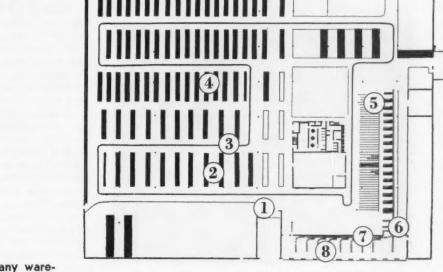
1400-FOOT DRAGLINE transports four-wheeled carts through the carehouse for order-picking. Carts can be easily removed.



CODE NUMBER on the blackboard of dragline trucks alerts employee that order ends item from his area.







Order service time can make or brake any ware-housing operation.
You can save money and time if you use . . .

# **Unit Loads For Faster Handling**



IN AN OVERALL PROGRAM to service its network of distributors faster and more efficiently, Crouse-Hinds Company of Syracuse, New York, built a \$1,300,000 warehouse and shipping center exclusively for cast electrical conduit fittings.

Under the previous warehouse setup, finished goods storage was inadequate. Restricted aisle space and repetitive handling were inconveniences which slowed up the shipping process. It took nine separate moves to take items from final assembly to outbound trucks. Most of the handling was manual.

The new facility has minimized these problems and introduced many features which make for more efficient and speedier material handling. Manual handling has been almost eliminated.

The heart of the operation is the unit load system. Items are now packed in quantity at assembly and box sizes are uniform. Especially fast moving items are located close to the receiving area to reduce

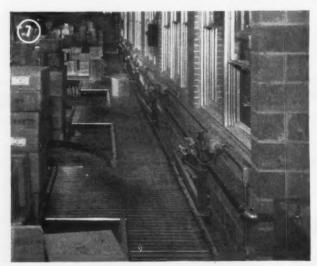
(Continued on Next Page)

DRAGLINE TRUCKS, their order pick-ups complete, are routed to packaging area. Belt conveyor (shown left) delivers to shipping.

Continued



PUSH-BUTTON central control station automatically distributes shipments at six-second intervals to nine outbound stations.



DEFLECTOR GATES, electronically actuated from central station, guide shipments down roller conveyors to specific docks.

fork truck traffic. Some products are even pre-packaged for volume shipping.

Products are received at the warehouse in open-end pallet crates and are transported to specific steel storage units by fork-trucks. The four-tier racks are eleven feet high and are spaced twelve feet apart to allow trucks to move freely. With this system, more than 10,000 different items in varying quantities can be stored in crates on the racks.

Running between these rows of racks on an overhead track is a 1400-foot dragline conveyor. Steel carts are hooked into the line at 20-foot intervals and are unhooked at desired places for filling of orders. Each cart has a compartment for orders and shipping papers and a blackboard to denote needed items. When an order has been completed, the cart is rehooked and continues on to the packing area. Here the carts are unhooked, unloaded; and the items packed for shipment. A feature of the cart is its wheels—steel with canvac treads. This assures longer wear for both wheel and floor as well as cutting down noise.

#### Packaging and Shipping

Individual packing stations have scales, inclined writing desk and steel storage for excelsior and shpping cartons. Completed orders are put on a roller conveyor which leads to the shipping rock.

At the dock a push button central control station automatically distributes shipments at six-second intervals to any of nine out-bound dock stations. Deflector gates, electronically actuated from central station, guide shipments down inclined roller conveyors to docks assigned to specific over-the-road carriers.

Nine dock stations and large yard area provide quick in and out access for outbound carriers.

The entire system is a mechanized material flow trailored to cut order service time by 24 hours on over 10,000 different types and sizes of electrical conduit fittings.



# Piggy-Back .....

# A Distribution Piggy-Bank

Savings in time and shipping costs plus flexibility were the results when York Corporation started shipping commercial air condition equipment from their Pennsylvania plant to Louisiana the "piggy-back way"

A high cube volume van, specially designed for railway transport, is used by the company for these shipments. It has an inside length of 34 feet 35% inches, inside width of 7 feet 9 inches and inside height of 7 10½ inches; as compared with average over-the-road trailers measuring 32 feet x 7 feet 5



VAN, specially designed for piggy-back operations, can be loaded and unloaded from the flat car without additional equipment, and can be hauled economically.

inches x 7 feet 5 inches. This makes it possible to ship more than the minimum carload at regular freight rates.

The van and its 25,118 pound payload are simply backed onto a railroad flatcar in York, and the tractor uncoupled and driven away. When the train-traveling carrier reaches a railroad siding, a tractor hauls it off the flatcar and delivers it to the warehouse.

The cost of one unloading and one reloading is saved, and because of less handling, the possibility of damage is greatly reduced.

From Car to Truck or Storage Bins at



with BAUGHMAN
High-Speed Model Q-51C
Portable
HOPPER CAR UNLOADER



Intake hoppers connected to car discharge hoppers with canvas connectors. NOTE: Adaptors for boxcar unloading available on special order.

- Gas Engine or Electric Motor.
- ► Lengths: 35' to 50'.
- ► Easily Raised or Lowered.
- Flow of Material to Full Pitch Screw
   Controlled by Sliding Gate Controls.



BAUGHMAN MANUFACTURING CO., Inc.
12 1114 Shipman Rd.

• Jerseyville, Illinois.





Circle No. 16 on Reader Service Card for more information

# Fork Truck Maintenance Schedule

Printed with permission of the Industrial Truck Association, this Preventive Maintenance Check List is from the ITA Handbook of Powered Industrial Trucks, which is reviewed on page 209.

#### Schedule "A" - Weekly or 50 Hours Service General (for all truck types)

Oil level in drive axle Service brake Parking brake Steering for backlash or binding Warning signal

Inspect:
Frame, skirts, etc., for damage
Tires, for cracks, scrubbing and other defects
Lubricate according to manufacturers' recommendations

Road test truck

#### Gasoline Powered

Check:

Radiator Gas tank and gauge Engine oil dipstick Oil pressure with engine warm Starting battery

Inspect: Radiator hoses

Fan and hydraulic pump belts

**Electric Powered** 

Check: Controllers and contact tips Wires and terminals

Inspect: Motor brushes Acceleration control Time delay

Fork Trucks

Check:

Oil level in hydraulic tank Hoist and tilt cylinders for leakage Hydraulic hoses and connections Pressure gauges and controls Forks for damage

Hydraulic controls Hydraulic relief valve Function of special attachments

Low Lift Platform Trucks

Check:

Trail wheel bearings for lubrication

Oil level in hoist mechanism

Platform lift linkage Universal joints

High Lift Platform Trucks

Check: Trail wheel bearings for lubrication Oil level in hoist mechansim

inspect: Lift chains or hoists Universal joints

Cranes

Check: Oil level in boom, hook, and slew reduction units Cable drums

All cables Universal joints Boom, for mechanical damage Test boom and hook limit switches

#### Schedule "B" - Monthly or 250 Hours Service General (for all truck types)

Neck:
All points in Schedule "A"
Oil in brake master cylinder
Clearance of brake shoes — adjust pedal
Oil level in steering gear housing
Dead-man control interlock Wheel holts Wheel bearings — repack and adjust Blow dirt out of truck with compressed air

Gasoline Powered

Check:

Timing Compression Spark plugs — clean and adjust Ignition points and condenser Carburetor — clean and adjust Starter motor Fuel pump Replace oil filter cartridge Measure transmission oil level Inspect muffler for breaks

Drain, flush and refill radiator Adjust clutch pedal

**Electric Powered** 

Check:

Operation of no-plug
All motors, brushes, commutators
Controllers and contractors — replace tips as required Direction control circuit

Fork Trucks

Hoist and tilt cylinders for excessive drift Chain reaving Upright members and elevator carriage Hydraulic pump for noise or leaks

Low Lift Platform Trucks

Check: Operation of controller linkage

Steering linkage Inspect platform for damage

High Lift Platform Trucks

Check:

Steering linkage Operation of controller linkage Lift mechanism and brake Inspect elevator carriage and uprights Lubricate lift chain

Cranes

Steering linkage Controller linkage Boom and Hook hoist brakes

Slewing mechansim Boom and hook hoist mechansim Lubricate cables

#### Schedule "C" - Annual or 2500 Hours General (for all truck types)

All points in Schedules "A" and "B" Wheel bearing seals Steering gear and linkage replace worn parts
replace worn parts
Trailing wheel assembly
Repack trailing wheel bearings
Repair bent or damaged frame parts
Wash, touch-up truck

Completely overhaul engine Disassemble and inspect transmission Disassemble and inspect differential

Oil level in automatic transmission

**Electric Powered** 

Disassemble and inspect drive reduction unit

Replace worn contact tips in controller circuit

Chack:

Acceleration control Direction control All wiring for loose connections and grounds

Fork Trucks

Drain, flush and refill hydraulic tank Inspect elevators rollers, wear strips, etc. clean and lubricate

Check:

Hoist cylinder packing Tilt cylinder packing and clean control Remove lift chains - inspect, wash lubricate Low Lift Platform Trucks

Check and service auxiliary switches Drain and refill lift mechanism housing

High Lift Platform Trucks

Uprights for excessive play Lift chain tension Drain and refill hoist mechanism housing Lubricate uprights and elevator carriage

Replace worn cables Drain and refill: Slew unit housing Hook hoist housing Boom hoist housing
Inspect and lubricate slew bull gear Check slew unit bearing adjustm

You can handle all kinds of materials

LOAD LUGGER hoist

... and these interchangeable LOAD LUGGER

containers \*...





For heavy bulk materials and machinery.



For rubbish and dry refuse.



For all types of fluids.



For sludge and liquids.



For granular, powdered or heated materials.



For scrap plate, sheared sections, sludge, castings, similar materials.



For carrying and discharging fluids.



For drums, lumber, pipe, similar materials.



For sand, gravel, carrying wet cement.



For light bulk materials.

\*Additional types and sizes of standard and special containers are available.

### Capacities to 16 cubic yards, 24000 pounds



You get unequalled money-saving speed, flexibility and safety with The Load Lugger System of materials handling, as hundreds of users can testify. It will pay you to investigate Load Lugger now. Tell us your problem - we'll make sound recommendations for solving it.

#### LOAD LUGGER, INGERSOLL KALAMAZOO DIVISION BORG-WARNER CORPORATION

18311 North Pitcher Street, Kalamazoo, Michigan, Telephone Flreside 5-3501 EXPORT SALES: BORG-WARNER INTERNATIONAL CORPORATION, CHICAGO Circle No. 79 on Reader Service Card for more information



Eliminate "down time" maintenance while you keep your caster and wheelmounted equipment rolling

mounted equipment rolling smoothly, quietly, effortlessly throughout your plant. Simply order Albion Demountable Tire Wheels... the best engineered, field-tested and service proved method of saving floors and wheel replacement costs. Available in a choice of floor protective tires (425 to 1200 lbs. per wheel cap.), these wheels have rugged 12-gauge formed steel demountable side plates bolted over tubular steel avies and roller hearbolted over tubular steel axles and roller bearings secured by positive grease retaining cups. Better check on wheels today!



Need "Specials" for Unusual Application? Albion also specializes in building casters to suit unusual or extreme requirements— economically. See typical examples below.









Don't Wait ... write today for information,

prices and speedy delivery on Albion casters and wheels.



ALBION, MICHIGAN

Circle 2 on Reader Service Card

# How Electronics Keep Truck Loading Under Control

The main function of any scale is to indicate weight-but with an electronic scale, weights can be printed, totaled, coded, taped, even transmitted to remote locations. Purpose of the additional functions is to speed up truck weighing and link the operation with other control systems. Accessory instruments available for processing and recording weight information include time and date printers, numerical count printers, full figure visual counters, totalizers, and teletype tape punchers. These devices can be incorporated in the basic scale unit.

Electronic weighing is based on the strain gage-load cell. This unit functions on the principle that the electrical resistance of a wire changes whenever a stress is applied to the wire. As stress is placed on the load cell, a fine wire bonded to a steel column in the cell is either stretched or compressed, causing a change in the electrical resistance of the wire. A constant voltage is supplied to the load cell through the wire; resistance caused by minute change in length of results in a voltage change.

An electronic truck scale utilizes a multi-cell compression system in which 4, 6, or 8 load cells (depending on the length and capacity of the scale) are placed under the weightbridge. Cables convey weight information from the cell to the recorder-a "brain" which uses a servo system, amplifier, step cams, correlating discs, and typewheels to interpret weight on the scale.

Only a small pit excavation is needed for installing a load-cell scale. Since cells are connected to the recorder with flexible cables. distance between the two is no problem. Construction obstacles can easily be by-passed to place the recording instrument in the most strategic position. Built-in telemetering systems may be used

to transmit information remotely. Ordinary maintenance procedures are not necessary for an electronic scale. It has few moving parts and stands up well under continuous heavy-duty use.

No routine service is required in the scale pit or on the load cells; they are sealed and protected from dirt. When repairs are required, they can be handled easily, with little down-time involved. If there is a failure of the load cell, the weightbridge can be jacked up, the cell replaced, and the bridge lowered. The scale is then ready to resume operation.



**ELECTRONIC** recorder prints weight of truck on outside scale.

A typical electronic scale installation is used by the Dolese & Sheppard Company to weight truckloads of crushed rock, gravel, and sand. Trucks load at a storage depot and drive onto the scale before leaving the yard. An electronic recorder in the scale house prints the full figure weight on the lading ticket and gives a visual reading on the dial. The weighmaster supervises the operation from the scale house and gives information to the truck driver over an inter-com system. The driver picks up weight tickets at a window located to the right of the electronic recorder. By this method, hundreds of loaded trucks are weighed quickly and accurately every day.



## Conveying By Gravity Rollers:

Installation photographs showing types and combinations of A-F Gravity Roller Conveying Equipment are part of a 4-page brochure available from the Alvey-Ferguson Co. There are blue-prints and descriptions of straight roller sections, curves, switches, y-sections, ball tables, hinged sections for passage-ways, floor-mounted and overhead-hanging supports, rollers spirals, chutes and slides.

Circle 286 on Reader Service Card

#### Truck And Caster Styles:

A 3-color catalog has been released by Nutting Truck and Caster Company for its combined trailer-towline order picking system and applications of balance-style trucks to trailer-train operations. In addition, there are illustrations of 52 models of 2-wheel trucks . . . 12 types of dollies . . . 4 wagon trucks . . . . 24 platform and shelf truck models . . . 15 styles of casters . . . jacks and semi-live skids.

Circle 287 on Reader Service Card

#### Circuit Details:

Details of plug-in circuit breakers and circuit breaker load centers for light commercial application are given in a 12-page, 2-color bulletin (GEA-661) offered by the General Electric Company. All units are indexed photographically with catalog numbers. Ratings are shown in easy-to-read tables, and knockout and dimensional diagrams are consolidated on one page for quick reference.

Circle 288 on Reader Service Card

#### Power Saving By Transistorized Units:

Power Saving of 95 per cent and space savings that allow 50 per cent more equipment to be installed are claimed for a transistorized "plug-in" unit by Builders-Providence, Inc., Division of B-I-F Industries, Inc. Sup. Bulletin 240-P4 describes design features, operational data, characteristics, and specifications of these units as applied to telemetering and control.

Circle 289 on Reader Service Card

### Weighing and Carrying Combined:

An illustrated brochure describing electronic weighing by the Ametron Electronic Crane Scale is available from the Streeter-Amet Company. It shows how this scale combines weighing and transportation operations. The exact weight of heavy loads may be recorded on tape, ticket, or cards in a cab located away from the weighing area.

Circle 290 on Reader Service Card

#### Claims Space, Dollar Savings:

A two-color brochure from the Deluxe Metal Furniture Company claims that Verti-File, an open shelf filing unit, can save 60 per cent on floor space at one-third the equipment cost. The claim is supported by a sheet which compares the space and dollar saving advantages of the unit with other kinds of equipment. Complete ordering information is available: style number, capacity, shipping weight, dimensions, colors. Information on setting up "starter" sections (to which additional units can be added) is included.

Circle 291 on Reader Service Card

# Compressor Tear-Down Photographs:

Features of the Rotary 600 compressor are illustrated in 38 photographs (many of them actual tear-down views) found in Bulletin P-106B supplied by the Le Roi Division, Westinghouse Air Brake Co. Several pages are devoted to the "unit construction" of the compressor, which allows individual cylinders to be removed, decreasing down-time on repairs and increasing maintenance availability.

Circle 292 on Reader Service Card

# Need Power And Facility Channels?

Two information sheets have been issued by the Alden Systems Company to explain its "Power, Facility and Communication Channels"—prefabricated and pre-assembled units which carry piping and wired circuits to any area of use. The channels are an integral part of the Alden Work Center System (also described), but may also be purchased separately for bracket-

mounting to wall or ceilnig, floor mounting on stanchions, or direct mounting to benches.

Circle 293 on Reader Service Card

### Precision Industrial Fasteners:

A broad range of precision industrial fasteners for a variety of production assembly and maintenance applications is reviewed in a bulletin published by Standard Pressed Steel Co. Four pages cover Unbrako socket screw products, Flexco self-locking nuts, Sel-lock spring pins and Hallowell steel collars, Included are microsize fasteners: cap set screws, locknuts and clinch nuts, in sizes small as #0.80.

Circle 294 on Reader Service Card

# Simplified Addressing And Marking:

"Now It's Web-O-Printing," says a bulletin from Weber Marking Systems, Division of Weber Addressing Machine Co., Inc. The publication describes a simplified method of addressing and marking labels, tags, and cartons by the use of a small hand stencil duplicator. Application Photographs show different ways the duplicator imprints addresses and product information. Eleven models, with printing dimensions and prices, are listed.

Circle 295 on Reader Service Card

#### Offers Clean Sweep:

The Industrial Sweeper Company offers Catalog IS-101, which illustrates Hydra-Sweep features—adjustable width of the side-front brushes, sweeping action of 150,000 sq ft per hour at 6 mph, operation in limited space. Examples of indoor and outdoor operation are given, plus a list of specifications of sweeper components.

Circle 296 on Reader Service Card

#### Battery Manual Re-Issued:

A revised edition of the "Battery Users' Manual" has been issued by the Industrial Division of Gould-National Batteries, Inc. The 44-page book has been specifically designed to enable

# New PAYLOADER attachment



# for SCRAP, BALES, TURNINGS...

"The new scrap grab attachment for our Model HA 'PAYLOADER' tractor-shovel is the ideal way of unloading trucks and boxcars... it has cut our unloading time in half," says H. A. Estabrook, Vice-President for Operations at the U. S. Reduction Co. The operation at their East Chicago, Indiana plant consists of unloading assorted and tangled light metal scrap from trucks and boxcars, and many other handling jobs.

This is another typical example of how many manufacturers are reducing handling costs and speeding production cycles by making use of the wide variety of specialized handling tools available only with highly versatile "PAYLOADER" tractor-shovels.

The combination of scrap-grab action with "PAYLOAD-ER" compactness and maneuverability provided the answer to the U. S. Reduction Co.'s problem of unloading tangled scrap shipments. First, the unit has the power to force its fork into the scrap pile. Then, hydraulic-powered arms grasp and hold the load tightly as it pulls back and comes out with a big bite. The operator comments that "a great deal of time is saved by being able to pick up an entire box load at one grab."

If you have awkward, bulky materials (like metal turnings, wire coils, hides, bark, bones or similar loose materials) that you want to scoop up, carry and load or stockpile in lots up to 2250 lbs. at a time, the scrap-grab attachment on a "PAYLOADER" is the tool that will save time and money for you too. You can get full details from your Hough Distributor or by using the coupon across the page.

# CUTS handling COSTS in HALF

#### PICK-UP...

It takes only one man and a self-loading "PAYLOAD-ER" scrap grab to pick up any bulky and hard-to-handle material out of boxcars, trucks or scrap pile. Tractor-shovel traction, maneuverability and compactness is combined with the powerful grip and lift of the attachment to break out big loads (up to 2250 lbs. at a time) from tangled piles.

#### CARRY...

After breaking out a big load from the pile, the material is firmly gripped between the bottom forks and the powerful hydraulic upper grab arms during travel. Spillage is at a minimum because . . . the grab arms adjust to any load through individual hydraulic rams. The "PAYLOADER" travels at speeds up to 10 mph., inside or outside, on paved or unpaved surfaces.

#### DUMP...

Hydraulic powered kick-out arms assure fast and complete dumping of loads wherever you want them... up to 6 feet high. Forks can be tilted down for a clean, vertical discharge. All operations are finger-tip controlled by a single operator without dismounting from the "PAYLOADER."



Above photos courtesy ALLOYS & CHEMICALS MFG. CO., INC., Cleveland, Ohio



NOW your Distributor of "PAYLOADER" tractorshovels and attachments has

at his disposal the broadest and most complete set of financing plans ever offered — TIME PAYMENT... LEASING PLAN\*... OPTION TO PURCHASE — any and all kinds of financing to best fit your needs. He will be glad to discuss any situation to help equip you with a "PAYLOADER" tractorshovel, the most productive material-handling tool available today.

# (Available in the Continental U. S. A.)

# other PAYLOADER scrap-handling attachments include:

Tine Buckets, Standard Buckets, Cut-Back Buckets,

#### THE FRANK G. HOUGH CO.

731 Sunnyside Ave., Libertyville, III.

Please send data on the "PAYLOADER" with scrap-grab attachment:

- ☐ Model HA (1500 lb. load capacity)
- Model HAH (2250 load capacity)



# PAYLOADER<sup>®</sup>

THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

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Name
Title
Company

#### . . . USEFUL LITERATURE . . . USEFUL LITERATURE . . . USEFUL LITERATURE

plant engineers, superintendents, and foremen to conduct an organized battery training course in their own plants. The manual contains over 60 photographs, diagrams, an tables to review battery theory and construction, and to demonstrate battery selection, charging, and testing.

Circle 297 on Reader Service Card

# Guide for the Latest in Television Equipment:

A comprehensive, illustrated guidebook to latest RCA broadcast equipment and systems for color and blackand-white closed-circuit television service in medical, educational, industrial and business fields is available from the Broadcast and TV Equipment Department, Radio Corporation of America. It employs color and monochrome photographs, diagrams, and sketches to describe the nature and applications of RCA's broad line of closed-circuit TV equipment.

Circle 298 on Reader Service Card

# System For Handling Containers:

The Load Lugger System—a number of patented detachable steel containers handled by a standard truck equipped with a specially engineered hydraulic hoist mechanism—is fully described in a bulletin released by Ingersoll Kalamazoo Division, Borg-Warner Corp. Typical uses of the system in municipal rubbish disposal, paper mills, sewage disposal plants, cemeteries, petroleum refineries and others are pictured.

Circle 299 on Reader Service Card

## Transmission Products and Their Uses:

The Jeffrey Manufacturing Company has available catalog #914 featuring transmission products and their uses in elevating and conveying machinery. Drawings and tables of demensions cover a variety of shaft collars, couplings, clutches, pillow blocks, take-ups, wheel hubs, gears, holdbacks, chains and sprocket wheels.

Circle 300 on Reader Service Card

# Describes Marking Equipment:

Industrial Marking Equipment Co., Inc. has published an 8-page catalog covering its entire line of marking, dating and coding machines. The illustrated catalog gives detailed technical data on Industrial's Whippet Marker, #7 Autoprinter, Rainbow Coder and other standard units. In addition, it outlines base lock types and logos, as well as showing many of the custom-designed marking machines for special applications throughout industry.

Circle 301 on Reader Service Card

#### Describes Consulting Service:

Container Laboratories, Inc. has just introduced a comprehensive brochure outlining its facilities for packaging consulting services. The firm can aid you in packaging line layouts, cost-reduction studies, market analysis, damage prevention, plant surveys, time and motion studies, automatic packaging, storage procedures, material handling systems, distribution studies and supervision and inspection. It has complete facilities for research and development, as well as design and engineering of packaging for all types of products.

Circle 302 on Reader Service Card



#### Codes Complete Packets:

Labels of all sizes and shapes—including round and oval—can be coded in packets of 500 or more with the Codedge Mark II coding and dating machine. This internationally known machine is distributed in the U. S. by Griffin-Rutgers Inc. It may be used for coding labels, cartons, bags,etc. Changing the code marking is simple, and operation takes no skill. A new bulletin describes the unit.

Circle 303 on Reader Service Card

## Rollers for Conveying Systems:

A brochure which illustrates and describes various types of rollers and frames for A-F engineered gravity and live roller conveying systems has been released by The Alvey-Ferguson Company. In addition to covering factors which should be taken into account in selecting the proper type and size of rollers, the brochure contains blueprints and complete specifications on rollers to meet any operating condition.

Circle 304 on Reader Service Card

#### Lifter-Dumper Applications:

"CESCO Skip Hoist Multi-Purpose Dumpers" is the heading of an 8-page catalog which illustrates the use of dumpers in various industries. Published by Essex Conveyors, Inc., the catalog contains photographs showing how the equipment handles bags, boxes, bulk, drums, and free-flowing material. Proper model size for every job can be found on a specifications sheet. Circle 305 on Reader Service Card

#### Low-Lift Pallet Transporter:

In Bulletin No. 1008-W the Automatic Transportation Company describes the performance of its Transporter Models WPY-4 and WPY-6 (4,000 and 6,000 pound capacities). Available pallet sizes are charted for both models. Specifications for electrical, mechanical, steering, and hydraulic assemblies are given. A feature of the truck is the Pallet-Chek, a set of spring-loaded pawls which holds the pallet firmly while the forks enter.

Circle 306 on Reader Service Card

#### How Big A Compressor?

Determining the proper size compressor for operating efficiency is one of the functions of a 32-page booklet, "Air Compressors For Industry," published by the Wayne Pump Company. Written to provide engineers, designers and users with sufficient information for decision-making, the booklet has charts, illustrations, and technical data on single and two-stage, vertical and horizontal, portable and permanent, 1/3 to 50 hp air compressors.

Circle 307 on Reader Service Card

#### Self-Propelled Crane-Shovel:

A 4-page illustrated bulletin describing the self-propelled Model CR-35 Bantam is announced by the Schield Bantam Company. The bulletin, designated No. CR-501, contains detailed information concerning specifications, features, operating data and capacities of the %-cubic-yard 6-ton crane-shovel.

(Also reviewed in October)
Circle 308 on Reader Service Card

#### Turntables for All Needs:

Turntables in a variety of sizes and styles are described in full in a 32-page catalog offered by Eisler Engineering Co. The literature illustrates and provides specifications for turntables ranging from standard models to large specially designed models. According to the manufacturer, there is a turntable to suit any industrial needs.

(Also reviewed in October)
Circle 309 on Reader Service Card

### Steel Strapping System Defined:

Answers to many strapping problems are contained in descriptive literature available from A. J. Gerrard Company. The literature describes Gerrard's complete line of automatic and semi-auto-





opens any box car door with the famous NOLAN One-Man Car Door Opener!

ONLY \$3950 EACH

F.O.B. NOLAN CO., BOWERSTON, OHIO

The 1957 model Nolan One-Man Car Door Opener easily multiplies one man's strength a hundred-fold and morel Opens the most cantankerous box car door with little effort In 20 seconds or less, without danger to life or limb! Save time and money with the Nolan!

#### Send Coupon Now!

THE NOLAN COMPANY
110 Pennsylvania Street, Bowerston, Ohio

Please send ONE-MAN CAR DOOR
OPENER at \$39.50

FREE LITERATURE

NAME.....

CITY.....ZONE...STATE.... Circle 116 on Reader Service Card NOVEMBER, 1957



matic strapping machines. These machines are designed to apply flat steel band, oval and round wire, and glass filament reinforced pressure sensitive tane.

(Also reviewed in October)

Circle 310 on Reader Service Card

# Conveyor Parts Handling Simplified:

An information sheet titled "New Magne-Carrier" supplies information about the magnetic way to carry parts along overhead conveyors has been prepared by the Multifinish Manufacturing Company. Parts are placed on e'ther side of the Magne-Carrier—magnetic attraction holds them securely as they move through such processes as cleaning, rinsing, painting, drying, etc. Specifications and prices of 16 standard models are listed.

Circle 311 on Reader Service Card

#### Steel Shop Equipment:

"Hallowell Steel Shop Equipment" is the title of a folder published by Standard Pressed Steel Co. Each line of cabinet benches, steel work benches, multiple unit benches, portable benches, tool cabinets, carts, shelving, and storage walls is pictured. Catalog identification, size, and shipping weight are provided for each unit.

Circle 312 on Reader Service Card

#### Describes Heavy Duty Overhead Cranes:

Bulletin No. HD-1000, published by Industrial Crane & Hoist, gives complete details on their line of heavy duty double girder overhead cranea. Construction is explained and illustrated in detail including sections on bridges, end trucks, trolleys and controls. Numerous installation photos are included to show applications in a wide variety of industries.

(Also reviewed in October)
Circle 313 on Reader Service Card

#### Wheels, Casters And Hand-Trucks:

A 35-page catalog, "Neilson Wheels," gives complete ordering information on wheels, casters, and hand-trucks. The Neilson Wheel Company publishes the booklet, in which each unit is described by size, application, and capacity.

Circle 314 on Reader Service Card

#### Railroad Jacks:

Railroad equipment of 20, 35, 50, or 100 tons is lifted by air motor jacks, according to Bulletin No. 427-RJ available from the Joyce-Cridland Company. Besides photographs and specifications

of individual models, there are descriptions of safety features common to the entire line. Special mention is made of the air-operated, aluminum alloy Diesel locomotive jack, which is one-third lighter than comparable jacks of the same capacity.

Circle 315 on Reader Service Card

#### How To Get The Most Out Of Carbon Brushes:

Getting the best performance out of carbon brushes is the theme of a new booklet, GEA-6688, published by the General Electric Company. The 8-page booklet contains question-and-answer interviews with George H. Cunnoe, Jr. covering brush life, metal transfer, commutator threading, bar marking, and commutator adjustment.

(Also reviewed in October)
Circle 316 on Reader Service Card

#### Suggestions For Savings:

Picture demonstrations of practical and proved methods of material handling are featured in a 15-page bulletin (No. 552) published by Barret-Cravens Company. Each page is filled with photographs of trucks, elevators, racks, control units, and accessories—all shown on the job, offering suggestions for use of the equipment in similar situations.

Circle 317 on Reader Service Card

# Handling Ideas For Frozen Food:

New methods of material handling for frozen food warehouse and wholesale operations are described in a series of three 2-color folders published by The Rapids-Standard Company, Inc. The material includes ideas for increasing efficiency of handling frozen foods in receiving, storage, and another section illustrates special equipment designed to speed and simplify these operations.

(Also reviewed in October)

Circle 318 on Reader Service Card

#### Truck Models Pictured:

Basic truck models are pictured in Bulletin BU-450, 'available from the Buda Division, Allis-Chalmers Manufacturing Company. Specifications and dimensions of lift trucks, towing tractors, and platform trucks are listed. The bulletin includes a load-rating chart of all tractor models.

Circle 319 on Reader Service Card

#### Stacking For Space Saving:

Stackbins and Stackracks, their applications in processing, assembly, and storage operations, are part of the subject matter covered by Catalog 505

published by Stackbin Corporation. Eighteen illustrated pages show space-saving through stacking, production speeded up by portable bins, combinations of bins and racks for varied situations. A parts list and a case history sheet accompany the catalog.

Circle 320 on Reader Service Card

# Bracing Assures Safe Delivery:

Preventing damage and facilitating fast unloading of rail shipments is the aim of a 4-page folder produced by the Signode Steel Strapping Company. Diagrams and photographs illustrate the uses of steel strapping in floating and anchored loads. A list of recommended carloading tools and accessories is included. The folder also describes a 16mm sound film, "The Test Track," available from the company.

Circle 321 on Reader Service Card

## Case History Of A Cost Cut:

In the form of a four-color folder, the National Metal Edge Box Company has recorded a case history of saving shelf space, cutting inventory time 30 per cent, and reducing the number of box sizes by 70 per cent for a manufacturing company—all the result of a "Packaging Survey." Described in detail, Case History No. 1 proves that it is not always the initial cost of the packaging but the savings inherent in the method that is more important.

Circle 322 on Reader Service Card

### How Computing Systems Work:

A 36-page, non-technical booklet has been published by Remington Rand Univac Division of Sperry Rand Corporation as a guide to the electronic data processing system. Titled "How The Computing System Works For You," the booklet describes the units of the system, how each works, and typical applications. Programming, the survey, process charts, flow-charts, instruction codes are explained simply and clearly.

Circle 323 on Reader Service Card

#### Two Yard Tractor Shovel:

The two-yard-plus capacity of the Nelson Model 200 Tractor Shovel is featured in a specifications sheet (Form 571) available from the N. P. Nelson Iron Works. All operating and construction specifications are given, including the optional Diesel engine.

Circle 324 on Reader Service Card

#### Describes Caster Uses:

The Roll-Rite Corporation displays its line of Super Casters in Engineering

Here's your guarantee of unrivaled service . . .

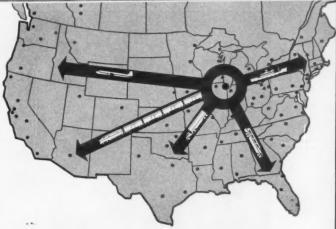
# Clark Equipment Company Announces Its NEW CENTRAL PARTS DIVISION in Chicago



Located at 7300 So. Cicero, Chicago 29, Illinois

# 4,500,000 PARTS ARE STOCKED HERE

The end to maintenance delays. Under this roof is the largest concentration of parts available in the materials handling industry. It's your guarantee of dependable service even if your local Clark dealer should need a specific part to supplement his regular inventory. Result? Superior service, less down time . . . your equipment is back on the job faster than ever before.



#### 24-HOUR EMERGENCY SERVICE . . .

Located at the nation's transportation hub, the Central Parts Division can ship by air, rail, truck, bus, or boat (overseas) to give your area the fastest, most convenient service possible.

Industrial Truck Division CLARK EQUIPMENT COMPANY

CLARK® EQUIPMENT

Battle Creek 13, Michigan

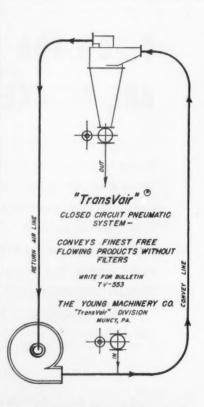
Circle No. 32 on Reader Service Card for more information





# ASHWORTH BROS., INC.

Atlanta · Buffolo · Charlotte, N. C. · Chicago · Cleveland · Dallas · Detroit Greenville, S. C. · Los Angeles · Louisville · New York · Philodelphia · Rochester Seattle · St. Louis · St. Paul · Canadian Rep., PECKOVERS LID., Jaronto · Montreal Circle No. 10 on Reader Service Card for more information



Circle 176 on Reader Service Card FLOW

#### **USEFUL LITERATURE**

Continued

Bulletin 301. Complete information and specifications are given for Super Casters With Self-Engineering Wheels (drag, tow-line, and trailer operation); Super Duty Casters (general use in warehouse, industrial plants, on platform trucks, trailers, and other portable equipment); Super Cushion Casters (hospital, sound studio, department store use, where noise and vibration should be eliminated); Super Cushion Hooded Caster (for restaurant, hotel, and hospital equipment).

Circle 325 on Reader Service Card

## Palletized Re-Usable Container:

A re-usable wooden container offered by Auto-Stack Company is described in literature now available. The container is palletized and completely demountable. No nails, bolts or screws are used in assembly, and no special tools are needed. The empty container is stored flat. It is made of six plywood panels, to form a container that is pilfer-proof, dust tight, vermin proof and moisture resistant. Capacities are up to 300 feet.

(Also reviewed in October)
Circle 326 on Reader Service Card

# Construction Equipment Line Illustrated:

A handsome 8-page bulletin with a 4-color cover describes and illustrates products manufactured for construction use by Le Roi Division of Westinghouse Air Brake Company. Included in the publication are a complete line of portable air compressors; the Tractair, a combination compressor-tractor, and attachments; Newmatic air tools, including breakers, drills, tampers, and spades; and CRD one-use drill bits.

Circle 327 on Reader Service Card

#### Wire Cloth Catalog:

The Cambridge Wire Cloth Company has just published a completely new catalog illustrating the company's complete line of industrial wire cloth, screens and wide cloth products. Within its 94 pages is included a description of the types and sizes of industrial wire cloth available from Cambridge, typical applications and a number of useful metallurgical tables. Another section gives standard trade definitions and ordering information.

(Also reviewed in October) Circle 328 on Reader Service Card

#### The Right Battery Charger:

General Electric Company assists in selection of the proper battery charger with Bulletin GEA-6525A, which lists the companys 7 models of metallic rec-

tifier battery charger. Two charts—one, application versus model; the other, weights and dimensions—are included. Photographs illustrate product and safety features.

Circle 329 on Reader Service Card

# Collecting Dust Saves Money:

"How Much Are You Paying For Dust?" asks a Torit Manufacturing Company publication, and points out that unitized dust collectors can reduce capital expenditure, save operating time and machine costs, and increase employee efficiency. On the job photographs and reports demonstrate

typical installations of cabinet cloth filter dust collectors and cyclone separator type collectors. Also discussed is the Torit Diamond Collector which has recovered as much as \$125 worth of diamond chips in 13 days of operating

Circle 330 on Reader Service Card

## Power and Free Overhead Conveyors:

A new planning folder containing the latest information about its free and power overhead conveyor systems has been released by Chainveyor Corporation. Included in the folder is a planning grid plus an explanatory dia-



- Complete bearing control throughout
- Synchronized 12-volt heavy duty system
- Feather-controlled stops
- Equipped with automatic charger and heavy duty industrial battery

Self-alignment dual floor brakes

Operates in 28" Aisle

#### MORE THAN 40 BIG JOE MODELS

- Range up to 2000 lbs. capacity
- Lifting heights to 130°

#### NEW 24-PAGE CATALOG

In-Between Handling is our business! For the solution to your problems, write for our new 24-page catalog. BIG JOE Manufacturing Co., Kilborn Avenue, Wisconsin Dells, Wis.



EXPORT DIVISION: 400 W. Madison St., Chicago

**BIG JOE** 

MANUFACTURING COMPANY
Kilborn Avenue
Wisconsin Dells, Wis.

Circle No. 20 on Reader Service Card for more information

gram of one of Chainveyor's systems, which will permit plant management to quickly determine their needs in an overhead conveyor system.

(Also reviewed in October)

Circle 331 on Reader Service Card

# Uses Of The Two-Way Radio:

Sixteen pages of a General Electric Company brochure (No. ECR-479) are filled with applications of the two-way radio in business, industry, military and safety operations. Such aspects as talking distance, licensing, equipment dependability, and engineering are covered. Adaptability, convertibility and interchangeability of G-E Progress Line are reviewed.

Circle 332 on Reader Service Card

#### Swivel Catalog Lists Uses:

The 1957 catalog of Precision Swivel Products can be procured from General Machine and Welding Works, Inc. Items are listed for the aircraft, fishing, lumber, marine, mining, oil, quarries, railroad, and steel industries and utilities.

Circle 333 on Reader Service Card



#### **Profit Short-Cuts:**

A neglected field of cost reduction is discussed in a booklet, "Short Cuts To Greater Profits," produced by the Equipto Division of Aurora Equipment Co. A general cost evaluation is made and specific suggestions listed.

Circle 334 on Reader Service Card

#### Make Your Own Storage Racks:

A 24-page book published by Tube-Strut Corp. tells how storage racks can be constructed from ordinary pipe and a simple universal clamp. Titled "Be Your Own Storage Rack Expert," this book explains in detail each step necessary in constructing any type of storage rack. Advantages of using pipe for racks are described: one-half the usual cost. Circle 335 on Reader Service Card

#### Fibre Containers Listed:

"Tough Babies For Material Handling" is the heading of a folder available from the Federal Fibre Corporation. The Fiberok line of baskets, cans, barrels, and boxes is pictured, along with other fibre products. Construction features of the "Fedeo" mill and tote boxes are diagrammed, and standard sizes listed.

Circle 336 on Reader Service Card

#### Self-Adjusting Dock:

The full-floating, self-adjusting Docklevler is described in a bulletin from the T&S Equipment Company. How this unit eliminates the dock attendant by automatically compensating as height of truck varies with changing load is featured. Specifications and capacities of different models are listed. Circle 337 on Reader Service Card

#### Tape Samples Offered:

A 4-page cardboard 8½ x 11 file with samples of paper, cloth, cellophane, fibre, and glass tapes hand-applied is offered by Tropical Tape Division. In File No. 57TT1 the use of pressure-sensitive tapes under difficult conditions is described and illustrated, with references to the actual tape samples. The tapes have been tested and used under tropical conditions of humidity, heat, mould, and sun exposure. Circle 338 on Reader Service Card

#### **Automatic Labeling Kit:**

A kit consisting of a folder titled "Automation-Labelation" and marginally-punched pin feed labels for experimentation is available from the Allen Hollander Co., Inc. An explanation of "labelation"—the application of labels to automation—demonstrates how pin feed labels are used, types of machines that can make use of them, and systems in which "labelation" can serve.

Circle 339 on Reader Service Card

#### Steel Prices and Profits:

United States Steel Corporation will furnish copies of "The Cost Facts Of U. S. Steel"—a statement made by Robert C. Tyson, Chairman of Finance Committee, to a Senate subcommittee, This booklet contains figures, charts, and graphs of income, employment costs, prices, profits, and other statistics.

Circle 340 on Reader Service Card

#### Specs on Conveyor Belts:

The Boston Woven Hose & Rubber Company, Division of American Biltrite Rubber Company, Inc., has available a revised folder giving up-to-date information and specifications on its complete line of high tension belts. It includes the latest data available.

(Also reviewed in October)

Circle 341 on Reader Service Card

#### Handling Film Available:

"Moving Mountains" is the title of a 27-minute, 16mm color and sound film offered for showing by the Clark Equipment Company. Dramatizing the role played by material handling equipment throughout civilization, the film opens with scenes of back-breaking physical labor performed by the early Egyptians and progresses through the following centuries, describing the advent and improvement of machines for handling and moving jobs.

Circle 342 on Reader Service Card

#### Describes Load Cell Systems:

The "Sensator" hydraulic diaphragm which imparts smooth, trouble-free operation to tension and compression load cells is featured in Bulletin M-27 available from the Martin-Decker Corporation. Specifications for the SL Series (tension loads) and SW Series (compression loads) of cell systems are given, as well as applications of both types.

Circle 343 on Reader Service Card

#### How To Roller-Stencil:

Selecting the proper rollers and ink for specific stenciling operations is part of the instructions given in a pamphlet offered by Diagraph-Bradley Industries, Incorporated. "The Rol-It-On Story" traces the history of the stencil industry, the introduction of the roller process, and the many and varied modern applications of the process.

Circle 344 on Reader Service Card

#### Skids, Pallets And Boxes:

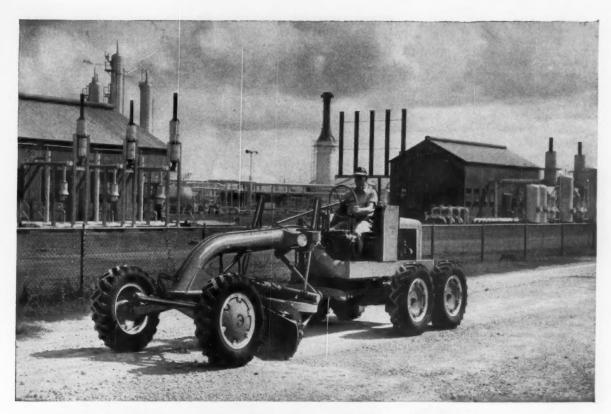
A 3-page bulletin issued by Fab-Well Corporation illustrates the company's line of skids, pallets, boxes, and drop-bottom boxes. Specific applications of the units can be determined from individual photographs.

Circle 345 on Reader Service Card

# How Automatic Loading Works:

"Man-O-Steel Michigan Automatic Loader" is the title of a brochure supplied by Michigan Crane & Conveyor Company. Metered loading is described in detail and case histories of user benefits mentioned. Sample dimensions of common loaders designed for automatic loading are charted in the publication.

Circle 346 on Reader Service Card



#### Allis-Chalmers Model D motor grader offers

# A NEW, SMOOTH APPROACH TO PLANT YARD MAINTENANCE

As more plants utilize their yards for storage, more plant managers are discovering the unusual value of an Allis-Chalmers Model D motor grader. They are discovering it is an ideal yard maintenance machine.

The Model D has all the essential design and performance features of motor graders costing up to three times as much. It keeps plant roads and storage areas smooth and well drained as only a full-fledged motor grader can, yet it is compact enough to work easily where larger machines cannot maneuver.

Further, its unusual versatility keeps the Model D working twelve months a year. With a rear-mounted, 5% yd hydraulic loader, it loads excess dirt from windrows, maintains stockpiles, clears and loads snow . . . handles many other jobs that normally call for specialized equipment.

Ask your Allis-Chalmers construction machinery dealer to show you how the Model D can smooth out your yard maintenance problems, or write for complete literature.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

#### MODEL D MOTOR GRADER (Choice of two engines)

	Gasoline	Diesel
Brake hp	50	50
Weight (bare)	8,800	9,350
Four forward speed	s to 25.6 mph	to 25.2 mph
Reverse Speed	to 3.3 mph	to 3.2 mph

Optional Equipment—Power Circle Turn, Leaning Front Wheels, Hydraulic Shiftable Moldboard



Hydraulic loader attachment greatly increases the usefulness of the Allis-Chalmers Model D motor grader. Other attachments include scarifier, windrow eliminator, snowplows. Optional cab provides operator comfort the year around.

**ALLIS-CHALMERS** 



Circle No. 3 on Reader Service Card for more information

#### CONTAINER INTERCHANGE

(Continued from page 91)

#### Disadvantages

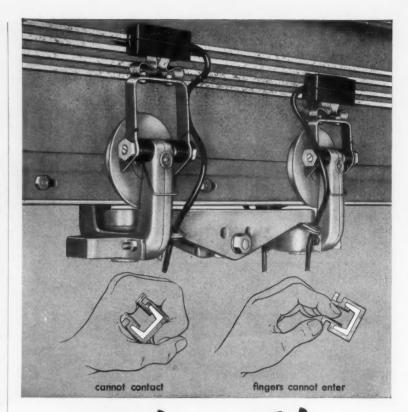
- 1. Fixed charges based on original cost or rental charge for containers.
- 2. Maintenance cost of containers.
- 3. Cost of returning containers without load.
- 4. Additional weight of shipment due to containers. The weight of the containers can be offset partially by reductions in packaging material. Under some conditions, special arrangements can be made with the railroads for the containers to travel without freight charges. Also, weight of container can be minimized by use of such lightweight materials as aluminum.

5. Paper work involved in keeping account of the containers—such as location, condition, per diem and repair charges.

Pallet Containers: Because they are rigid units, pallet containers can be loaded satisfactorily into box cars or vans with less clearance than is necessary for a palletized unit load. Clearance required for convenient loading depends on rigidity of container and its external surfaces. As pallet containers vary widely in type and construction, desirable working clearances in loading may vary.

With pallet containers of maximum outside dimensions and smooth side walls-preferably with scuff plates near the top and bottom-two units 54 inches wide or three units 36 inches wide can be loaded easily in a 110-inchwide box car. The lining of the car must be smooth so that the containers can be slid into place. Similarly, two containers 44 inches wide, or three containers of 29 inches width, with smooth side walls, can be loaded easily into a van with minimum inside width of 90 inches, providing the van has a smooth lining or guide rails.

For recommended standard sizes of pallet containers suitable for interchange service between highway, railroad, marine, and air carriers would have maximum outside dimensions of 36 x 29 inches; 44 x 36 inches; 54 x 44 inches; and 78 x 54 inches. These are based on the previously dis-



# NEW! SAFE! AMERICAN MONORAIL KANT SHOCK

# SHIELDED ELECTRIFICATION

For MonoRail Track and Crane Systems

By covering its standard bus bar electrification with a specially designed polyvinyl chloride extrusion, American MonoRail now furnishes completely safe electrified systems.

This KANT-SHOCK shielding absolutely prevents accidental contact with live bus bars. It is impossible for an adult's finger to enter the shield. A new type sliding shoe collector provides a floating contact throughout a monorail system regardless of any misalignment due to bent bars or at switch and inter-lock connections.

KANT-SHOCK Electrification positively eliminates all the hazards of open bar conductors – prevents costly accidents – protects employees – reduces insurance rates,

Write for KANT-SHOCK Bulletin KS-1

Member of Materials Handling Institute and Monorail Manufacturers Association

For Power Driven Conveyors, Use Landahl Chainless Conveyors

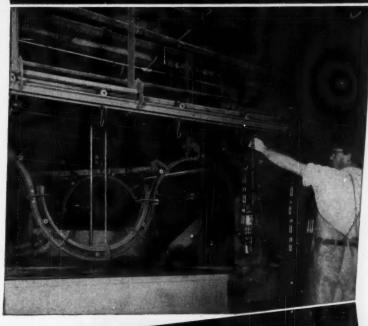


MONORAIL COMPANY

13129 ATHENS AVENUE . CLEVELAND 7, OHIO

(IN CANADA—CANADIAN MONORAL CO., LTD., GALT, ONT.)
Circle No. 6 on Reader Service Card for more information

# Saves floor space!



Multiple Dipping with

LANDAHL CONVEYOR

Sharp dips and turns are features of this installation. The Landahl Chainless conveyor furnishes both horizontal and vertical turns on a minimum radius of 24 inches. The conveyor carries metal products through a cleaning operation consisting of a series of dip tanks only 6 feet long. It then continues through drying oven to take-off point.

Write today for bulletin LS-1.



#### THE AMERICAN MONORAIL CO.

13129 Athens Avenue • Cleveland 7, Ohio Circle No. 89 on Reader Service Card for more information NOVEMBER, 1957

cussed standard pallet sizes.

With a standard inside box car height of about 101/2 feet, it is practical to stow pallet containers to a height of 10 feet. In a modern van with a door opening and inside height of 7 feet 4 inches or more, it is practical to stack containers to a height of 7 feet. Optimum height of pallet containers suitable for stacking in either standard box cars or vans could be 28, 40, 60, and 84 inches. This means that three 28 inch containers would stack 84 inches high in a van and fourhigh to 112 inches in a box car. Two 40-inch containers would stack 80 inches high in a van and three-high to 120 inches in a box car. The 60 inch containers stacked two-high in a box car would also go 120 inches, and the 84-inch container would be a good fit one-high in a van. In most cases, pallet containers arranged for tiering will nest from 1 to 2 inches. The tiered heights would be adjusted by this amount.

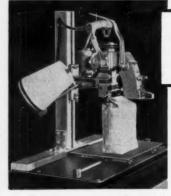
It is reasonable to expect that any of these four sizes of pallet containers can be standardized in four heights. This would permit efficient stacking in either box cars or vans and take maximum advantage of the cubic space available. Containers 28 and 40 inches high are of convenient depth for shop boxes. Units 60 and 84 inches high are well proportioned for side or end-door portable containers for handling small packaged units. These taller units are also particularly suitable as bin containers for bulk materials.

Under certain circumstances, it may be desirable to use relatively small containers that can be nested and assembled into strapped units. Such units can be used interchangeably with standard pallet containers. The Air Force has been experimenting with a similar system of modular containers (Fig. 1).

Jumbo Pallet Containers: In addition to these four sizes of pallet containers, there is coming into use one that is double the width of the large pallet containers and fits broadside into a van. This jumbo pallet container, particularly adapted for use with



### **NEW!** FOR CLOSING SMALL BAGS!



FISCHBEIN TABLE MODEL CARRIAGE CONVEYOR

(Model FS)

One simple knob locks any Fischbein Portable Bag Closer into proper sewing position. Carriage slides freely and returns automatically to starting position, ready for next bag.

# UNIQUE VERSATILITY! Any Fischbein Bag Closer can be used 3 different ways!

- 1. Completely portable
- 2. Suspended with counterbalance
- 3. On carriage conveyor for closing small bags

#### FOR DETAILS, MAIL THIS COUPON TODAY!

DAVE FISCHBEIN CO., DEPT. 48 ... 2730 30th Ave. S., Minneapolis 6, Minn., U.S.A.

Name	
Firm Name	
Address	
City	ZoneState

Circle 61 on Reader Service Card for more information

# the 1958 FOUNDRY SHOW

CLEVELAND Way 19 - 23

Where
POINT OF SALE
IS POINT OF
MAXIMUM
USE

According to U. S. Department of Commerce figures, United States foundries produced 8,379,691 tons of castings during the first six months of 1957.

Did you realize that to manufacture this tonnage 1,675,938,200 tons of materials had to be moved? That's right—on the average, for all types of castings, the Foundry Industry moves 200 tons of materials for every ton of castings produced!

Need anything more be added to establish the Foundry Market as the foremost potential user of all types of Materials Handling Equipment?

The 1958 AFS FOUNDRY SHOW will attract the buying influences from every foundry—they'll come to Cleveland to select and purchase equipment to simplify and speed their own operations. They're mechanization-conscious, and they need materials handling equipment for the industry-wide modernization program. Remember, the 200/1 ratio...200 tons of materials moved for every ton of castings manufactured!

An exhibit in the AFS FOUNDRY SHOW provides a unique opportunity to demonstrate materials handling products directly at the point of sale... to an industry that is spending over \$6 billion annually for equipment and materials. Write for floor plan, rates and application blank—space assignments now in progress.

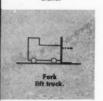
#### the 1958 FOUNDRY SHOW

62d Castings Congress
AMERICAN FOUNDRYMEN'S SOCIETY





Partable





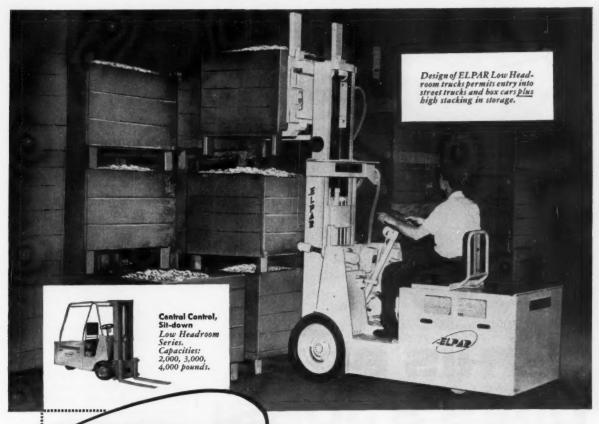
Men and







Circle 199 on Reader Service Card for more information



# FORK TRUCKS





End Control, Stand-up Cargo Sconts, Capacities: 2,000, 3,000 pounds.



# ALL types for ALL needs

Choose the exact fork truck you need from the complete ELPAR line. There are sit-down and stand-up, central and end control models in many capacities. And they can be specially adapted or equipped with attachments to handle "problem" loads.

ELPAR trucks are electric-powered to provide quiet, fumefree operation at a cost of only pennies per day. They are built to last; over 90% of those made since 1925 are still in use. As a no-cost extra, Elwell-Parker field engineers advise your men on proper preventive servicing... a free, personalized service that adds many years of truck life.

Follow the example of 75% of the 100 largest U. S. manufacturers: pick the *right* truck for your material handling ... choose an ELPAR!

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THE ELWELL-PARKER ELECTRIC CO.

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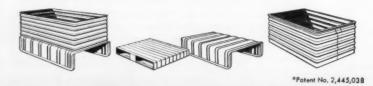
# THIS BOX DOES 3 JOBS!

1. PRODUCTION. Combined with Union Metal positioning stand this box provides automatic work-level positioning of material. Eliminates old-fashioned stoopstretch-bend methods.

2. UNIT LOADS. Transfer, storage, stacking with fork truck... just like ordinary skid boxes.

**3. DUMPING.** Hinged drop-bottom feature automatically discharges parts or scrap quickly and with perfect control.

In addition, Union Metal offers industry's broadest line of conventional type material handling containers. Write for complete catalog information. Address The Union Metal Manufacturing Company, Canton 5, Ohio.



# UNION METAL

Material Handling Equipment

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#### CONTAINER INTERCHANGE

Continued

highway vehicles, would have a maximum dimension across the van body of 88 inches and a depth of 44 inches. It can be placed in a van either singly crosswise or two-wide lengthwise. A large jumbo pallet container double the size of the small jumbo pallet container is sometimes used. These large containers, 88 inches long by 88 wide, can be rolled into the van on casters, or on sections of roller conveyor on the floor of the van and on the dock. Its length of can be varied to fit one, two or more containers evenly into the length of the van. Since jumbo containers are primarly intended for use in highway vans, the most efficient height would be 28 inches. (3-high), 42 inches (2-high), 63 inches and 84 inches. (Table 1).

Cargo Containers: The term "cargo containers" designates a type of shipping container, usually larger than the pallet container, that has weatherproof construction for outdoor storage and transportation in open cars, trucks, barges or ships. These containers are used both for bulk materials and for merchandise. They are of rugged construction for crane handling and particularly adaptable for interchange between open truck, rail and water transportation.

#### **Designed For Gondolas**

Because such containers are designed primarily for transportation in open gondola cars, dimensions of cars determine the proposed sizes for these containers. A standard gondola 52 feet 6 inches inside length, 9 feet 6 inches inside width, can be divided into six compartments 114 inches wide x 98 inches long. A large cargo container with smooth exterior surface and rugged construction would occupy one of these compartments and have an ultimate maximum outside dimension 112 x 96 inches. With a width of 96 inches, this unit can be transported on a flat frame highway vehicle and be within legal American highway width limitations. These dimensions also are

# Ask Standard how to mechanize handling

Here are some specialties
from Standard's wide line of
conveying equipment



# SEPARATES PACKAGES

Autodiverger provides low-cost, high-capacity package separation . . . by counting, machine demand, size, weight or color differences. Can handle up to 150 cartons per minute without slowing flow of production line. Bulletin G 70.



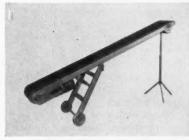
#### BUILD YOUR OWN POWER CONVEYOR

Handidrive consists of pre-engineered, standardized components. With these units you can economically build a power conveyor to meet your exact needs. Units operate on horizontal, inclined or declined planes. Bulletin G 96.



#### CUTS COSTS IN SHIPPING ROOMS

Handibelt. This portable conveyor can convey bags, cartons, boxes horizontally and at a wide variety of inclined and declined angles. It's easy to adjust, easy to use... fits in crowded aisles, box-cars and freight elevators. Bulletin G 64.



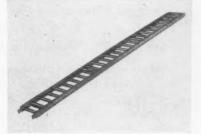
#### INCLINES 26 DEGREES

Handibelt Boom is designed for unlimited levels or inclined planes to 26°. Riding on rubber-tired wheels, this lightweight unit is ideal for applications where portability is desired. In 11-, 16- and 21-ft. lengths. Bulletin G 64.



#### HANDLES SMALL PARTS

Partsbelt handles stampings, die castings, plastic parts and pieces of all kinds from presses or other machines to tote boxes, bins or conveyors. Can be operated and adjusted by one man. Available in three sizes. Bulletin G 64.



#### EASY TO MOVE

Litewate is perfect for jobs that require moving conveyor from one place to another. Sections can be easily carried and set up by one man. In aluminum or steel models from stock. Straight or curved sections. Bulletin G 64.

Standard designs and builds permanent and portable conveying systems and units using roller, belt, slat, chain, pushbar or sectional conveyors—power or gravity; also spiral chutes and pneumatic tube systems.

FOR DETAILS on Standard's complete line of conveyors, contact the Standard representative listed in the yellow pages of your phone book or write direct. Ask for Bulletin No. G 64. Address Dept. A-11, STANDARD CONVEYOR COMPANY, General Office: North St. Paul 9, Minnesota. Sales and service in principal cities.



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RAYMOND Electric Pollet Truck Model WL4F capacity 4000 lbs.

# You're a SM-O-O-TH operator George!

George: Aw Susie, where'd you hear that!

Susie: From the boys in the warehouse . . . they say

you're as gentle as a kitten.

George: Sure . . . and you wouldn't believe these muscles

had so much power, would you?

Susie: Why George, I'd believe anything about you.

George: Me! I'm talking about this RAYMOND Electric

Pallet Truck!

There's no other truck quite like it, Susie. Those "muscles" have twice the voltage of conventional walkies . . . extra power on ramps even with full capacity loads. Yet, this electric pallet truck gently maneuvers in close quarters and narrow aisles because of fingertip controls on the handle . . . shorter overall length and wide steering arc. Safe in tight spots . . . automatically reverses when the safety button on the handle touches the operator's body. Complete with battery and charger at a price so low you wouldn't think it possible.

#### The RAYMOND CORPORATION SEND 3347 Madison Ave., Greene, N.Y. ☐ Send latest Raymond Electric Pallet Truck Bulletin FOR ☐ Have a Raymond representative call on me COMPLETE COMPANY DETAILS! STREET

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#### CONTAINER INTERCHANGE

Continued

suitable for most narrow-gage or foreign railroad cars.

Half-sized cargo containers with maximum dimensions of 96 x 56 inches would fit two abreast in each of the gondola compartments. Only cargo containers with rigid welded construction and smooth outside surfaces with scuff plates at contact points could use these maximum dimensions. Riveted construction with splice plates, lap joints and projecting rivet heads must have smaller outside dimensions for adequate clearance.

Both the large and small cargo containers can be designed for general merchandise and bulk materials. The merchandise container also may be arranged with a variety of inside fixtures for securing many kinds of special freight, or it may be insulated and refrigerated. Both the large and small cargo containers can be transported on flat-frame highway vehicles and carried as hold or deck cargo on barges or ships. The over-all height of these containers should not exceed 8 feet 4 inches to keep the unit within the 121/2 foot highway limitation when mounted on highway vehicles.

Cargo containers may be flatbottomed, mounted either on skid runners or four legs, or "semilive" on two fixed wheels and two legs. (Table 2).

Cargo containers transported on special open container cars ordinarily are considered by the railroads as demountable, sectionalized, car bodies that take the place of box car or covered hopper-car bodies. As such, they are exempt from freight charges, both loaded and empty. This is usually a special arrangement with the railroads that greatly encourages the use of cargo containers.

#### Interchangeable Bulk Shipping Containers

Bulk shipping containers are used for handling crushed, powdered or fluid materials. Suitable sizes of shipping containers to use as bulk containers would include the 36 x 29 inch; 44 x 36; 54 x

#### PACKING



#### FROM WIREBOUND



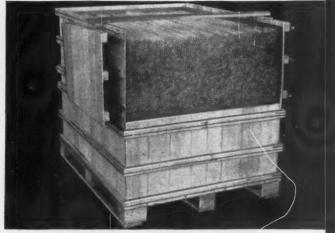
Double-Deck Crating for Windshields is reaching new savings high for glass industry. This "King-Size" box holds sixty wrap-around windshields—more than a ton of glass—and stacks three or more high. Safe packing is quick and easy; unpacking is just a matter of removing the front section. This new "double-decker" is another example of Wirebound engineering that has resulted in savings on: packing time, handling during warehousing and shipment, tare weight costs, and unpacking time.



"Long Ton" Package Has Long List of Uses. Packaging silicon metal and ferro-silicon exactly 2240 pounds to the Wirebound pallet bin, Keokuk Electro-Metals Co. has effected new storage, transport and handling economies. The open-top, one piece bin is nailed to a strong base, requires only moments to assemble, and permits easier storage, strict inventory control, "mixed" load shipments. At destination, loads are stored quickly according to grade and size . . . bin on bin. Some customers dump bin and all in furnaces.



New Bomb Crate Blasts Costs. Imagine saving \$20,000 a year simply from a change in packing. That is what happened when a contractor for 25-pound practice bombs switched from a heavy nailed wood box to engineered Wirebounds. First, the cost of packing was cut in half; then, by cutting tare weight from 13 to six pounds, freight charges dropped 11 per cent. Besides storing flat before assembly, the boxes need no nailing to close them and they can be stacked over 170 high!



Breakage Reduced 87% by Wirebound! Packing and shipping four to five thousand fragile glass tubes created a breakage problem only Wirebound engineering could solve. A special box was designed which created no new handling problems but cut breakage from 15 to 2% immediately. And, in addition, the new Wirebound crate decreased the cost of packing by 83% to effect a double saving. If you have container problems, call in an expert—your Wirebound man.

FREE BOOKLET . . . Packing is a skill and an art at Wirebound. See what can be done

See what can be done
... what problems can
be solved ... how

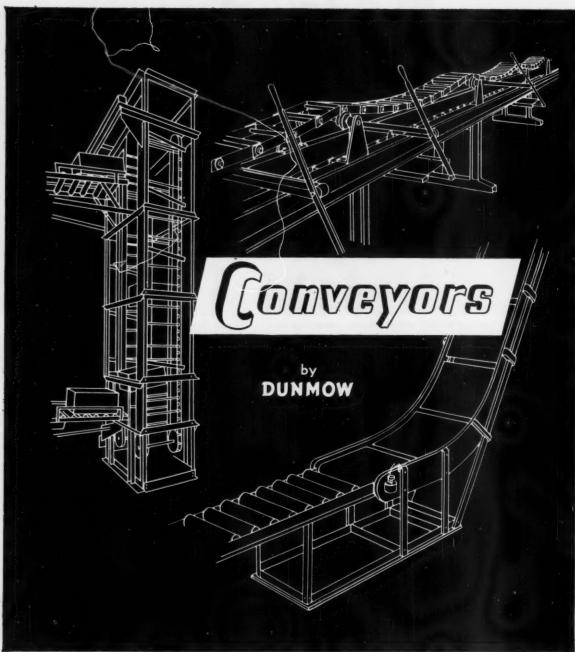
be solved...how
Wirebound applications can save tremendously without sacrificing strength or
protection. Write for 16-page "What to
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specific problems with a Wirebound
Sales Engineer.



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Clark, a foremost manufacturer of material handling equipment, now offers a complete line, with capacities from 2,000 to 5,000 lbs., using Zenith LP-G systems.

# CLARK PROVES THESE 8 ADVANTAGES OF ZENITH LP-GAS CARBURETION SYSTEMS



For dependable, economical carburetion—Zenith is not only the oldest but the most experienced manufacturer of carburetors for industrial engines. This experience has been applied to its LP-Gas systems to deliver all the advantages which LP-Gas fuel can bring to your industrial equipment. If you are considering the advantages of LP-Gas carburetion for your industrial equipment, you are invited to consult Zenith's specialists in this field. Their experience and facilities may save you time and/or money.

- 1. No objectionable exhaust fumes when properly adjusted.
- 2. Three to four times longer oil life.
- 3. Up to twice the number of hours between major engine overhauls.
- 4. Minimum dilution of crankcase oil and cleaner spark plugs.
- 5. Quieter, smoother operation—with fewer tune-ups.
- 6. Faster refueling-change tanks in two minutes.
- Phenomenal savings in fuel costs have been reported along with these other numerous operating advantages.
- 8. Essential components approved by Underwriters' Laboratories.

Zenith\* carburetion systems offer manufacturers of material handling equipment an opportunity to give their equipment the advantages of LP-Gas at low cost.

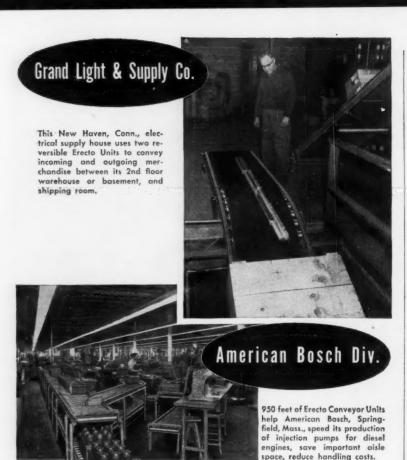
Conversion units are available to present owners of all makes of lift trucks, tractors, motor vehicles, and other combustion engines. Contact your local dealer and specify Zenith Carburetion Equipment.

For complete details phone, wire, or write: LP-Gas Sales Department, Zenith Carburetor Division, 696 Hart Avenue, Detroit 14, Michigan.

Zenith Carburetor Division



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# SAVED ENGINEERING, INSTALLATION COSTS with LAMSON HRECTO conveyor units

Nationally known companies, large and small, call Lamson Dealers to integrate pre-engineered Erecto Conveyor Units into their materials handling systems. RESULTS: A conveying system where they want it, when they want it, how they want it . . . at only nominal expense.

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LIVE ROLLER

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UNIT BOOSTERS

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#### CONTAINER INTERCHANGE

Continued

44; and 78 x 54 inch bulk pallet containers, and the 96 x 56 and 112 x 96 inch bulk cargo containers. The bulk pallet containers ordinarily would be either sealed or weathertight and could be transported in either box cars or gondola container cars, covered or open vans, or in barges or ships. Bulk cargo containers would ordinarily be transported in gondola container cars, Fig. 2, flatframe trucks and trailers, or in barges or ships.

Bulk pallet containers, for the most part, would be arranged for either lift-truck or crane handling. These containers preferably would be either 5 or 7 feet in height and arranged for tiering in box cars, barges, ships or in storage.

Bulk cargo containers can be made in a number of types. The drop-bottom type can be provided with or without a cover and in various heights, depending on the density of the material to be handled. Such a container would be suitable for heavy, coarselycrushed, low-value material.

Other types of bulk containers have a controlled discharge gate. Smaller sizes of bulk containers ordinarily would have one hopperdischarge gate, and the large containers two gates, usually of the slide type. These containers would have tight hatches and be suitable for handling pulverized materials.

#### Should be Tiering Type

All sizes of bulk cargo containers should be arranged for tiering in storage and aboard ship. They could also be provided with legs or runners with 12 inch underclearance for handling with lowlift platform trucks or provided with fork pockets so they could be handled with fork trucks. All of these units should be of rugged construction and designed so that they can be handled with crane grabs or slings.

Another type of large bulk cargo container has a single filling hatch and double discharge hopper gates. Ordinarily, six of these containers are accom-

# "A switch to USS Gerrard Steel Strapping boosted our production 100%"

... says E. K. Buchholz, Plant Manager, Lawson Manufacturing Company, New Kensington, Pa.



Close-up of crew strapping bottom of carton with 16-gage USS Gerrard Round Steel Strapping. The machine is a Model N mounted in a special jig allowing it to be raised and lowered.

THE LAWSON COMPANY produces quality water heaters ranging from 20 through 120-gallon capacities. Orginally, all Lawson heaters were shipped in wooden crates that required 80 hand-driven nails.

To cut production costs, Lawson switched the packaging of 20 through 50-gallon tanks from wooden crates to 350-pound test cardboard cartons, bound top and bottom with Gerrard Round Strapping. The closed cardboard container not only keeps the product clean, but the carton is easily handled and also displays a large product-identity symbol.

To attain production-line speed, Lawson uses two Gerrard Model N machines. As the cartoned heaters roll along a line, the carton bottom is secured by the first strapping machine. Six feet further along the line, a second crew straps the carton top with a second Model N, as shown in the main illustration. Elimination of the time-consuming crating operation has increased production 100% and reduced packaging costs considerably.

USS Gerrard Steel Strapping can probably solve *your* packing problems, too. Learn more about USS Gerrard Round and Flat Strapping from the new 36-page Gerrard Blue Book of Packaging.

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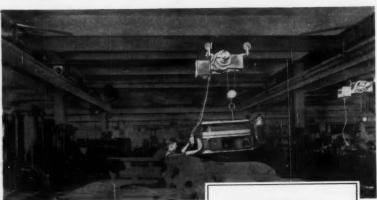
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# SHEPARD NILES

HOISTS

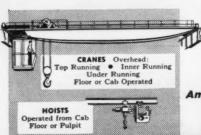
# LIFT LOADS

long after they're written off



LOOK FOR YEARS of dependable, trouble-free lifting when you invest in a Shepard Niles Hoist. Because Shepard Niles builds hoists that go on lifting long after you've written their original cost off. This is the kind of performance you expect and get with a Shepard Niles Hoist.

Investigate the complete line of Shepard Niles Hoists . . . choose from medium and heavy capacities with slow, medium or fast speeds. Built for cycle duty, heavy intermittent duty, medium duty and lightoccasional service. Short to long lifts, standard or close headroom, manual or magnetic controls.



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#### CONTAINER INTERCHANGE

Continued

modated in a gondola container car. Four containers can be mounted in the center of the car between the trucks, however, so that the containers can be emptied without removing them from the car. This type of container is particularly suitable for situations where bulk containers are handled by barge and transferred by dock crane to special container cars that permit discharging and returning empties without removal from the car. A similar arrangement is possible where the destination does not have a railroad siding. Containers could be transferred from the gondola container car to a flat frame trailer designed so that the bulk containers could be discharged without removal from the trailer. Under such circumstances, these containers take the place of and have, the advantages of a covered hopper car.

Bulk pallet and cargo containers have special advantages. They can be used to transport bulk material in various sized units, and they keep material free from contamination. Elimination of bags minimizes liability of loss and damage and saves the cost of the bags.

Standardization of bulk container sizes and the development of standard railroad container cars and highway vehicles especially designated to handle these containers provides all economical, convenient and safe means of bulk handling superior to many of the methods currently in use (Table 3).

#### Need for Universal System

Considerable progress has been made, in the last few years, in developing a demountable truck body that can be used interchangeably on railroad cars, highway trucks or trailer chassis.

Although several applications in the medium sizes have been satisfactory, and a few installations using large van bodies have met the needs of special situations, there has not been worked out a universally acceptable system that well-known national concern reports:

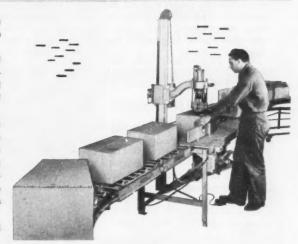
# INTERNATIONAL DUAL STAPLER Saves \$7378.00 per year over taping on Carton-Closing Costs

The cost-comparison chart shown here tells the winning story for the International Staple way of closing cartons from the outside after they're filled.

The accurate time study maintained by this national organization has proved once again the superiority of International stapling over taping, both in lower material costs and in labor savings. Closing your cartons by stapling is faster and less expensive than taping.

The International Dual Stapler used in this test is capable of stapling hundreds of cartons per hour, closing both tops and bottoms simultaneously. This Stapler, like all the Staplers in the International line (from hand operation to automatic twin-end models), have many other advantages, too! For example, they make a neater carton closure . . . save the storage space needed for set-up cartons, meet the safety requirements of Rule 41, and save you considerable time and money.

See your International Man soon for other interesting cost-performance stories.



SAVINGS REPORT:		TAPING	INTERNATIONAL STAPLING	SAVINGS
INTERNATIONAL STAPLING VS TAPING	Yearly Cost of Materials	\$1968.00	\$880.00	\$1088.00
(Based on average packing rate of 9608 cartons per mo., for 40 and 50 lb. cartons.)	Yearly Cost of Labor (based on same M/H Rate)	\$10,056.00	\$3766.00	\$6290.00



TOTAL INTERNATIONAL SAVINGS \$7

\$7378.00

International Staplers

INTERNATIONAL STAPLE & MACHINE COMPANY

ORIGINATORS OF CARTON CLOSING STAPLERS

810 EAST HERRIN ST. HERRIN, ILLINOI

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# New Ideas IN MATERIALS HANDLING

A REPORT ON DEVELOPMENTS
IN THE COORDINATION OF
\* MOVEMENT — TRANSFER
- ACCUMULATION — CONTROL

\* in this issue "MOVEMENT"

# **NEW RAPISTAN "CONTROLLED MOVEMENT"**

#### solves old breakage and injury problems

"Controlled Movement" means more than the simple premise that materials must move. They also must move safely. And safety is the plus factor engineered into Rapistan systems.

Ingenious, yet practical devices guard the problem spots inherent in any materials handling system, reducing breakage of materials, minimizing hazards to personnel. For example —

#### safety of products

At every control point in the system, Rapistan places an appropriate safety device. Guard rails at curves — belt conveyor sections to space cartons ahead of turns—extensive guard rails on overhead runs. Such precautions safeguard products moving on a Rapistan flow system.





#### safety of personnel

The exclusive "pop-out" feature in Rapistan Live Roller units eliminates a hazard existing in other designs. What might have been a personal injury is just a handful of rollers—which are easy to replace. This is typical of the safety-conscious engineering... the basis of every Rapistan design.

This higher concept of materials handling — safety — pays important dividends in the efficiency of your personnel, and a marked reduction in costly dam-

age to materials in movement. Learn how you can have these benefits, call the man from Rapistan, or write for Free booklet, "Controlled Flow in Action."



The RAPIDS-STANDARD CO., Inc.

19 Rapistan Bldg. Grand Rapids 2, Mich.

Manufactured under license in Europe, Canada and South America Circle No. 130 on Reader Service Card for more information

#### CONTAINER INTERCHANGE

Continued

could be developed into a standardized system for van container interchange.

To meet the requirements of a universal, standardized system of van containers, or van-tainers, that can be used interchangeably on railroad cars, highway truck and trailer chassis, in barges, ships or even in the larger air cargo planes, certain characteristics are essential:

- 1. Over-all cross sectional dimensions similar to those of highway van bodies with over-all width of 8 feet (maximum width legal in all states) and an over-all height that will not exceed 12½ feet when carried on a highway chassis (maximum height legal in all states).
- 2. Series of lengths and capacities corresponding to popular sizes of truck and trailer bodies, the largest not exceeding 35 feet (maximum highway vehicle length legal in all states). An assortment of vantainer lengths gives the shipper a choice of capacities to fit his requirements so that shipments can be in truckload quantities.
- 3. Provision in design of vantainers for handling at transfer points by crane grabs, crane slings, fork trucks or straddle trucks, and for tiering.
- 4. Rigid construction to withstand longitudinal-impact on railroad cars, side-rocking caused by rolling of ships, and super-imposed weight of other containers when tiered.
- Aluminum construction to reduce tare weight, especially when transported by highway or by air.
- **6.** Provision inside for securing cargo to prevent shifting from impact, side-sway or vibration.

To meet these specifications a series of five sizes of vantainers is proposed, all with the cross-sectional dimensions of the modern highway volume van body in over-all lengths of 8, 11, 17, 23 and 34 feet, with capacities of approximately 400, 575, 900, 1200 and 1800 cu ft, respectively. This variety of capacities provides a

# GENERAL ELECTRIC "CONTAINERIZES" scrap and waste as they accumulate...





Rome, Ga. Plant "Containerizes" Scrap and Waste at Accumulation Points...One Man. One **Dempster-Dumpster** Serve 36 Containers

WASTE IS CONTAINERIZED ...

PICKED UP ...

# Dempster-Dumpster Disposal System Serves Today's Industrial Leaders ....

Industrial waste disposal has passed the day of manual shoveling, rehandling, shaky bins, wheelbarrows or cumbersome carts. General Electric and other leaders "Containerize" waste when and where it originates by using clean, big capacity, Dempster-Dumpster Containers. Tremendous savings in disposal costs are made with the one-man, one-truck Dempster-Dumpster which can service over a hundred accumulation points, picking up, hauling and emptying containers on a planned shuttle schedule.

Savings are so great that thousands of users, large and small have amortized their equipment investments in 18 months or less. If you are now using costly conventional methods of handling rubbish, waste and scrap in your plant, it will pay you to send for the free booklet below.

FREE: Write Today for Your Copy of "How to Reduce Waste Disposal Costs."  DEMPSTER BROTHERS, Knoxville 17, Tenn., Dept. F-11	
To: Dempster Brothers, Dept. F-11	HAULED
Knoxville, Tennessee  Please Send Without Obligation Your Booklet, "How to Reduce Waste Disposal Costs."	
NAMETITLE	
COMPANYSYSTEM	
ADDRESS	Control Control
CITY	AND DUMPED



# These labels can't come off

They're facsimile labels. You print them directly on cartons. Saves cost of real labels. Faster than brush stenciling. Cuts shipping losses.

Here's a fast, systematic way for addressing multiple shipments. In one easy motion, you can imprint both a facsimile label and customer's address directly on a carton. 30 to 40 cartons can be addressed in a minute. No labels to type or apply; no ink brushes and stencilboards to wield. Facsimile labels are sharp and clear, yet can be easily blocked out for re-handling by consignee.

All that's needed is a Weber handprinter and Kustom-Kut stencil. Stencils are die-cut with facsimile of your label. All you do is type the customer's address on the stencil and attach to the printer. Fast, neat, systematic and inexpensive. Write for full details on the Weber Facsimile-Label System.

Good for product identification marking too.





marking systems

Division of Weber Addressing Machine Co., Inc. Mount Prospect, Illinois

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	Address	
	CityZoneState_	

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#### CONTAINER INTERCHANGE

Continued

wide choice for the shipper to meet almost any capacity requirements, whether he is shipping palletized unit loads, pallet containers, packaged merchandise, furniture, express or parcel post, or specially stowed material utilizing internal racks, shelves or other securements built into the interior of the container. Fig. 3 and the Table 4 give the dimensions of the proposed series of van containers and their capacities in cubic feet, as well as the number of pallet containers that can be accommodated.

The outstanding advantage in the use of vantainers is the ability the shipper has to pack a unit shipment in a container that can be delivered to the consignee as a sealed unit, regardless of whether shipper or consignee has rail or water transportation facilities. Although this discussion of vantainers deals primarily with their use for merchandise, bulk-cargo containers of the same external dimensions, designed for interchange between transportation carriers, have these same advantages.

The advantages of TOFC (trailer on flat car) and VOFC (vantainer on flat car) service to the railroads allow them to handle through-shipments in highway units under the following conditions:

- 1. When either or both shipper and consignee do not have railroad facilities.
- 2. When it is cheaper to substitute local highway pickup or delivery even though railroad sidings are available.
- 3. When it is cheaper to abandon unprofitable railroad branch lines and sidings and make highway pickup and delivery.
- 4. When less than carload shipments, with resulting in-transit rehandling, can be reduced by shipping truckloads in smaller highway units.

Inherently, railroad transportation of carload or truckload units over longer distances is cheaper than highway transportation in

136

Hold it!
How about
those slings?
That's a
\$50,000
engine



And if your slings aren't all they should be, it could wind up as \$50,000 worth of engine parts ... well-distributed, too.

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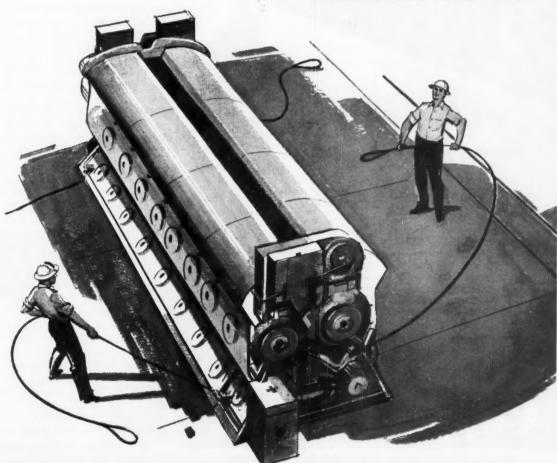
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#### CONTAINER INTERCHANGE

Continued

ton-mile costs for such factors as labor, maintenance and fuel. For short distances and for local pick-up and delivery, the convenience and versatility of highway transportation make it more economical and, often, the only available transportation.

Railroads furnishing door-to-door pickup and delivery service maintain fleets of motor vehicles. It is a natural development for them to adopt TOFC service to haul their own large trailers between cities and avoid freight rehandling from trailer to car and then from car to trailer. Savings to the long-distance truckers in time and operating costs makes the use of TOFC profitable for them.

Some of the drawbacks to piggy back service are being remedied, but there are several that can only be met by substituting a system of vantainers. Under certain conditions, semi-trailer-on-flat-car service meets current requirements quite satisfactorily. For the long range requirements of the large railroads and trucking companies, though, VOFC has many advantages over TOFC service. In using a standardized series of vantainers in a range of sizes advantages include the following:

- Selection of the most suitable size of vantainers from a choice of several different capacities.
- 2. In addition to cross-sectional dimensions and rear doors similar to modern volume van bodies, standard vantainers have small vertical corner radii so that the inside of the front end is flat and square.
- 3. Standard vantainers mounted on either flat cars or highway chassis are within railroad and highway-clearance regulations. The modern volume semitrailer van on a standard flat car may exceed A.A.R. equipment height limit by as much as a foot and thus require selective routing.
- 4. Vantainers can be positively secured to flat cars and highway



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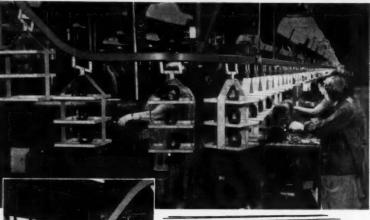
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"Stuffing-Trays" carry a continuous sup-

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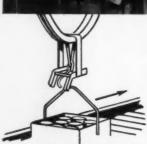
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The above photo and line drawing demonstrate how the R-W "Zig-Zag" Conveyor automatically picks-up full trays and automatically deposits them at the unloading station. Machine operator starts cycle by merely sliding full trays into the conveyor path.

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#### CONTAINER INTERCHANGE

Continued

chassis with a minimum of attachments and without the use of an elaborate system of tie-down

5. Loading and unloading vantainers on and off flat cars can be done quicker, with more flexibility, and cheaper with suitable transfer equipment than is possible with TOFC methods.

6. Loading or unloading vantainers from flat cars with cranes or fork trucks can be done in any order, with as many cars as convenient; roll-on, roll-off, circustype end-loading of trailers must be in a certain order and is practically restricted to a short string of flat cars.

7. Railroad container flat cars can efficiently accommodate several sizes of vantainers for maximum utilization of car length.

8. Highway trailer chassis used with vantainers are retained in the home fleet, do not have to be shipped to distant points. Location, condition and availability are known, and operation and maintenance are under control of the local owner.

9. Flat container cars are small, light, and cheap. (They are narrow, with open frame, and without deck and side guard rails or elaborate pedestal and tiedown gear).

10. Vantainers are lighter in tare weight than semi-trailers of similar capacity.

11. Vantainers represents a lower investment than semi-trailers of similar capacity.

12. Vantainers occupy less space in storage and on shipboard than semi-trailer units; they efficiently utilize available cubic space.

13. Vantainers can be tiered in storage or aboard ship with still further savings in cubic space.

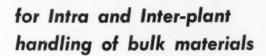
14. Vantainers on flat cars are not as susceptible to pilferage, sabotage or malicious mischief as pneumatic tired trailers lashed on.

15. Vantainers can be economically used for yard storage without tying up trailer equipment.

# 6 Good Reasons

WHY YOU SHOULD BUY

#### YOUNGSTOWN DROP BOTTOM CONTAINERS



#### 1. STURDY CONSTRUCTION

Youngstown drop bottom containers are constructed of sturdy steel members. They are rugged and durable and with ordinary care will give many years of satisfactory and repair-free service. Long life and economy are assured.

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The single hinged discharge door of Youngstown drop bottom containers is positively and securely locked when closed. Easy release of the door and quick and complete discharge of the load are obtained by a gentle pull of the release cable. The discharge door is automatically locked when it swings closed and inspection for locking before loading the container is unnecessary. This saves you time and money.

#### 3. VERSATILITY OF HANDLING

Youngstown drop bottom containers can be readily and effectively handled by lift truck, single drum hoists and magnets. These containers can also be stacked.



#### 4. SAVINGS IN HANDLING COSTS

Youngstown drop bottom containers can be moved directly to the points where the material is to be used and unloaded on the spot. No intermediate handling is necessary and no dumping into storage bins for later use is required. Thus, handling costs are substantially reduced.

#### 5. SAFETY OF LOAD

The discharge door cooperates with adjacent portions of the base of the drop bottom container to prevent loss of even fine bulk materials. Spillage of materials is eliminated.

#### 6. VERSATILITY OF USE

Youngstown drop bottom containers can be used effectively to handle bulk materials which, when unloaded normally raise clouds of dust that might be undesirable or injurious to men and machines. These dust clouds are eliminated by supporting the container on its base, disengaging the lock from the door and slowly raising the container while the lock is disengaged.

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#### CONTAINER INTERCHANGE

Continued

16. Vantainers are ruggedly constructed, have internal provision for securing lading, and are securely fastened to flat cars so that they can be used in regular railroad service through classification yards and switched like any box car. TOFC units must be specially routed and carefully handled to prevent damage to trailer and contents.

17. Standard vantainers in captive service can be furnished with any arrangement of doors or interior fittings to meet special requirements.

#### Transfer Equipment Needed

Use of vantainers is at present held back by the necessity of providing suitable equipment at zone-transfer points for lifting vantainers off and on railroad flat cars, highway flat-frame trucks, trailers, barges or ships. To handle the complete size range of vantainers would require a 30 ton crane or at least two sizes of fork trucks.

Dual TOFC-VOFC System: The ultimate solution to this problem—which will give shippers, truckers and railroads the most efficient system with respect to time requirements, cost and safety—will be a dual TOFC-VOFC system that can handle both vantainers and semi-trailers, with facilities to provide for both roll-on, roll-off and lift-on, lift-off types of handling.

Another drawback to the use of standardized vantainers has been the absence of a practical range of container sizes and the inadequacy of existing facilities to handle this range. There are many spotty applications where several sizes and types of vantainers are satisfactorily handled. The Mobilvan system developed by the Clark Equipment Company and the Adapto system developed by the American Car and Foundry Company have utilized fork trucks successfully for transferring mediumsized containers. The Ocean Van Lines, the Missouri Pacific Railroad and others have developed crane-handling methods for trans-

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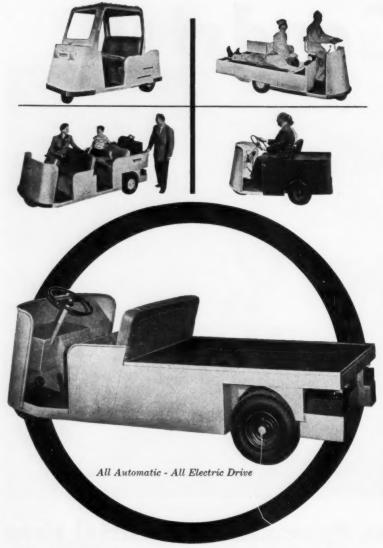
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#### CONTAINER INTERCHANGE

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ferring larger containers. (Editor's note: See "Piggyback in High Gear", FLOW, Oct. and Nov., 1956). A universal system for handling a series of vantainer sizes is needed with handling facilities—including cranes with electrically operated grabs or spreader slings, straddle trucks, and front and side loading fork trucks—having ability to handle all sizes and capacities of vantainers.

Standard Vantainers: Figure 3 illustrates how five standard sizes of vantainers can be handled efficiently on a 75 foot flat car. Various combinations of sizes are also possible. The 75-foot car is the most efficient since it accommodates, with a minimum of lost space, all five standard sizes of vantainers. Channel cradles at 3 foot intervals provide anchorage for the fork pockets of all sizes of containers in any combination of arrangements.

The same vantainers mounted on truck and trailer chassis are shown in Fig. 4. The flat-frame trailer has its own tail lights and rear bumper projecting beyond the vantainer rear to protect rear doors from damage. As all vantainers should be entirely square in the inside of the forward end. they have a smaller vertical outside corner radius than most highway van bodies. Because of this, more space may be required for jack-knife clearance between the vaintainers front and the tractor cab back than that needed for the customary flat-nosed trailer body with 10-inch radius at forward corners.

To keep the flat-frame trailer within maximum allowable overall length of 35 feet, it is necessary to reduce the large vantainer length to allow for the rear bumper and smaller front radius. An over-all length of 34 feet will take care of these allowances. In the West Coast States, where semitrailers 40 feet long are permissible, 39 foot vantainers could be used for service confined to those states.

The "doubles" rig popular in

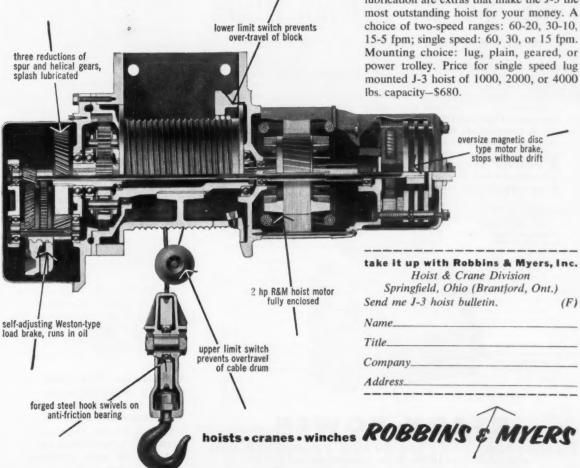
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#### CONTAINER INTERCHANGE

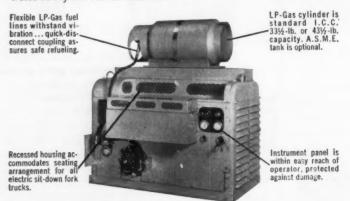
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Now, get the advantages of full-time LPG-electric power for any electric, sit-down fork truck, regardless of make or model. Compact Ready-Power model HA-3 accommodates all seating arrangements . . . assures remarkably low-cost operation . . . minimizes objectionable fume problems. Compact LP-Gas cylinder is mounted on top of engine-generator housing for quick, easy interchangeability. Hinged cover and side plate give easy access to engine accessories; removable end plate permits service of generator. LP-Gas components are listed by Underwriters' Laboratories and comply with Factory Mutual recommendations. Write today for full information.



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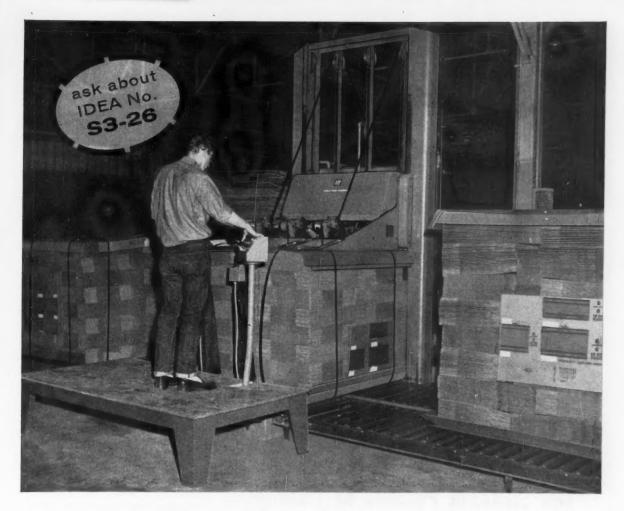
The READY-POWER Co., 3838 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Condicioning Units; Gas and Diesel-Electic Power Units for Industrial Trucks Circle No. 134 on Reader Service Card for more information the West can use two 24-foot vans with stub tractor and still remain within the 60-foot length limitation. Making allowances for trailer rear bumper and front corner radii, a 23-foot vantainer is about maximum practical length. This is also about the maximum practical length for mounting on a truck chassis or for city delivery mounted on a semi-trailer.

The 17-foot van body is a popular standard size for several of the trailer builders. Most of the Mobilvans and Adapto units in present use are 17 feet long. This is also about the safe limit in length for stability when handling a vantainer broadside with a commercial fork truck. The 17 foot van body is about the shortest practical length for a semi-trailer and about the longest length suitable for truck-chassis mounting for city curbside delivery. Two 17 foot vantainers can be carried on a 35-foot flat frame highway semitrailer.

The 11-foot vantainer is suitable for city pickup service where a small unit is preferred. The 8 foot vantainer is rather short for general city use; its principal function is as a shipping container where cubic foot capacity meets certain shippers' needs. Its use would, for the most part, be confined to special, captive service. Both 11 and 8 foot vantainers would be suitable for shipments of mail, parcel post, express or other commodities that require smaller capacity units, where it is desirable and cheaper to ship truckload rather than less-than-truckload in a larger unit. These sizes can be furnished with side doors which allow two containers to be placed one ahead of the other on either 23 or 17 foot flat frame highway chassis for curbside

Combination Flat Cars: Although a special flat car for handling vantainers can be considerably cheaper and simpler than a piggyback flat car, there are advantages in a combination flat car that can be used interchangeably for either trailers or van-



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#### CONTAINER INTERCHANGE

Continued

tainers. The proposed vantainer design shown in Fig. 5 permits the use of either the narrow framed vantainer flat car or the wide decked flat car used generally in TOFC service. Only a slight modification would be needed to adapt the currently used 75 foot piggyback cars for handling vantainers.

The slow process of backing trailer units up end-ramps onto a string of flat cars and securing tie-down gear is costly in time and labor. As TOFC service increases and the string of flat cars gets longer, costs of loading and unloading get proportionally higher.

Transfer of vantainers between flat car and trailer chassis by standard fork truck is restricted to small or medium-sized containers. A wide, hard-surfaced roadway is required alongside the track for fork trucks to maneuver vantainers between highway chassis and flat cars. As the usual railroad flat car is 2 or more feet wider than the van body, the fork truck must have counterweight sufficient to handle the vantainer at this extra long reach. Fork trucks can be designed to lift a 60,000 pound vantainer and place it on a standard flat car. But Instability of the load, required strength of pavement, and maneuvering space required are so great that it is doubtful if there is economic justification for handling 34 foot vantainers by the usual type of end-loading fork truck.

Side Loading Fork Truck: A side-loading, retractable-carriage fork truck could be built to handle 34-ft vantainers in transfer yards where no crane is available. A truck of this type, long enough and with sufficient capacity to handle the largest vantainers. would have four forks to stabilize and distribute the load. It would have individually driven wheels uniformly distribute the load; allaround steering so that it could move sideways as well as lengthways; double-end control for handling 23 and 34 foot vantainers without turning around; and outIf it moves...

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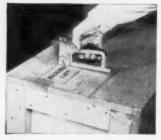


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#### CONTAINER INTERCHANGE

Continued

rigger jacks and shifting counterweights for stability when picking up the heaviest vantainers.

#### Transfer Yard For Efficient Interchange

The most promising solution to this problem of interchange between highway and rail carriers is, in the author's opinion, a transfer yard using cranes with the compact arrangement of dead-end tracks now in most TOFC transfer vards. Figure 6 shows a suggested arrangement that can handle either trailers or vantainers, with six tracks served by a gantry crane. This yard can be so arranged that track numbers 1, 2, 5 and 6 also can be served by roadways-permitting fork-truck loading of vantainers-as roads adjoin tracks 1 and 6, and the rails of tracks 3 and 4 are flush with the pavement between tracks 2 and 5. Permanent ramps would be furnished at tracks 1, 2, 5 and 6, and portable ramps at tracks 3 and 4. Thus, all six tracks can be used for TOFC service when required. The flat cars on all tracks can be loaded by backing trailers over end-ramps with a tractor, in the usual piggyback loading methods, or trailers can be towed front-end first by the crane at a much quicker rate and with more accuracy and safety.

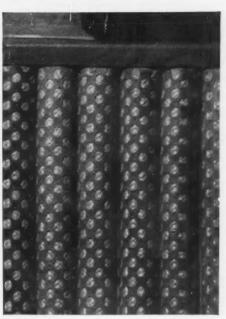
With a yard crane available, the tractor hauling the trailers from the storage yard would uncouple under the extension of the craneway without turning the trailer around. The crane would lift the front end of the trailer and its landing gear clear of the ground and tow the trailer frontwards over the ramp and down the string of cars to its final position. There, the tie-down crew already has the front end stanchion in position to receive the kingpin of the trailer. While the crane returns for the next trailer, the crew secures the tie-down gear and prepares the stanchion for the next trailer. With this system, the time and man-hour requirements should be considerably less than with the tractor backup loading method.

A transfer yard with a track

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their money. But in addition, there are truck users who are switching to this TG Exide-Ironclad Battery from cheaper but less economical makes.

If you want maximum economy and better performance in the operation of your electric industrial trucks, get the new TG Exide-Ironclad Battery. You can have more capacity in the same size or the same capacity in a smaller size at a lower cost. Call your nearby Exide representative. Or write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Philadelphia 2, Pa.



The Electric Storage Battery Company

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Continued



curved nose plate ideal channel above nose plate. for barrels. Cross-member Height-40". Handle ascurved with stronger con- sembly extra rugged. 6" struction. 6" wheels.

MODEL HB-200-Provides MODEL H-250-Full strip wheels.



channels on both 300 Rugged full channel conmodels up above critical stress points. Standard 8" plate.

MODEL HB-300-Filler MODEL H-350-6" wheels. struction above nose

#### NOW!

#### Order any hand truck you need from Pusharound standard models and accessories

There are now eight standard Pusharound models to choose from for every hauling operation.

Pusharounds are built of Magnesium, offering all the strength of steel with 1/3 the weight.

Pusharounds are built for abuse, saving on maintenance costs. They avoid accidents caused by fatigue and last for years.

Pusharounds provide these extra benefits:

- **BOLTED CONSTRUCTION**
- STRONGER FILLER STRIPS AT STRESS POINTS
- RUGGED ROLLED PLATE WITH FORGED RIBS FOR **EXTRA STRENGTH**
- SPECIAL AXLE FRAME FOR WHEEL CHANGING
- SAFETY WHEEL GUARDS

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effective load height. 8" height is 501/2".

MODEL H-400-Extra MODEL H-450-400, 500 MODEL HB-500-Rugged MODEL H-550-Pressedbracket provided for more series (except HB-500) construction for heavy in steel bushings in axle have one piece curved barrels. Cross-members frame for long wear; elimi-Effective load channel above nose plate have a curved channel in nates axle bracket dam-501/2". for maximum capacity, 8" back and a strap front age, 10" wheels.

# MAGNESIUM HANDLING EQUIPMENT Dealers in Principal Cities

Brooks & Perkins, Inc. 1944 WEST FORT STREET DETROIT 16, MICHIGAN

HAND TRUCKS • PLATFORM TRUCKS • SHELF TRUCKS • BIN TRUCKS • TRANSFER TRUCKS

GARMENT RACKS • MOBILE CABINETS AND RACKS

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and crane arrangement is equally adaptable to the transfer of trailers, vantainers or other shipping containers. Pallet or cargo containers in gondola container cars also can be unloaded by crane directly to flatbed highway trucks or trailers located on any of the pavements at tracks 1, 3, 4 and 6. The gantry crane also can transfer all types of containers, including vantainers, from cars on any track to trucks in any paved area under the crane.

#### Collection and Storage of Trailers

A large storage yard at the head of the tracks is needed for collection and storage of trailers or vantainers before loading and after unloading. Yard tractors would transfer trailers between the storage vard and loading crane. When vantainers on highway chassis arrive at the transfer yard. straddle or fork trucks would lift off vantainers and deposit them in the storage area in locations indicating destination.

Loading Pattern: Loading of vantainers would not have to be made in any definite order as is required for end-loading trailers. They could be loaded selectively on any car in the yard. As soon as the loading pattern has been established, loading could be started without delay. Straddle trucks would pick up the vantainers from the yard and leave them under the craneway extension. Independently and conveniently, the crane could then be used to place the vantainer on any designated car. Procedure for unloading would be the same in reverse order.

Incoming container cars might have some vantainers that were routed through and would not be unloaded. The universal selectivity possible with crane handling would permit any arrangement or order of loading that might include moving vantainers from one car to another. This would level the work load and greatly increase the capacity of the transfer

An electric crane grab operated



#### Want to eliminate a hoist headache?

The biggest headache in hoist maintenance is the hoist brake. You eliminate this headache when you use P&H Hevi-Lift® hoists with the exclusive RCD brake.

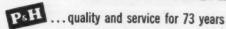
The RCD brake on the P&H Hevi-Lift is a simple, rectified D.C. brake without clapper, linkage, or laminated parts. Total brake movement is a short 1/32 of an inch.

Total braking area of a 3-ton hoist exceeds 27½ square inches, permitting positive braking with only 3.4-psi pressure. There's no heat build-up, no need for air-cooling to dissipate frictional heat. The brake

is *always* totally enclosed, effectively preventing any dust, corrosive, or abrasive particles from entering the brake housing and accelerating wear.

The net result is a fool-proof, maintenance-free brake reducing hoist maintenance to *half* that required by other makes with conventional "hammeraction" brakes. For more information, write Dept. 213F, Harnischfeger Corp., Milwaukee 46, Wis.

#### HARNISCHFEGER



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#### uik-Pik SLASHES ORDERPICKING COSTS!

GRAVITY SHELVING

- **Cuts Picking** Distance
- Segregates Picking -Restocking
- Saves Space
- Speeds Selection
- Rotates Stock
- **Tightens** Inventory Control

ELECTRICAL PARTS

PHARMACEUTICALS

AUTO PARTS WEARING APPAREL

TOILETRIES

Adjusts to Changes

**APPLICATIONS** WAREHOUSING



Because QUIK-PIK® live-storage-in-depth reduces aisle frontage, it cuts order picker's non-productive walking by as much as 75%.

Result: Substantial labor savings.

For complete information write:



Quik-Pik" does the trick!

NORTH AMERICAN EQUIPMENT CORP. 100 BROADWAY E. PATERSON, N. J.

#### CY BELT says



can help you cut production costs!" Unnecessary manual handling of prod-

ucts can add unnecessary expense to the price of your product. Very frequently a Cyclone Metal Conveyor Belt can speed up processing time and eliminate superfluous personnel. Perhaps it has been a long time since you took a critical look at your materials processing system. Why not do that soon? One of our trained salesmen would be glad to help. Chances are he can show you exactly how a Cyclone Belt can help the profit side of your ledger. There is no obligation. Just fill in coupon.

CYCLONE FENCE DEPARTMENT an Steel & Wire Division, United States Steel Corpor Waukegan, Illinois



USS CYCLONE CONVEYOR BELTS SPIRAL WOVEN

FLAT WIRE . FLEX-GRID

Cyclone Fence Dept. A-117, Waukegan, Illinois Please have your trained representative call on us to discuss our production prob-

City ..... State

UNITED STATES

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#### CONTAINER INTERCHANGE

Continued

with the other crane controls would be used for handling vantainers. No hook-up men would be required as the flange of the grab lifting arms would engage the side sill channels of the vantainers as shown in Figs. 5 and 6. Similar franges on the lifting mechanism of straddle trucks would engage channels of vantainers. Pick-up and release of vantainers can be accomplished in a matter of seconds by crane or truck opera-

As both trailers and vantainers could be handled without interfering with each other, changeover to vantainers would proceed without difficulty. The many advantages of the VOFC system over the TOFC system could be realized as soon as the railroads and large trucking companies were convinced of the time and monetary savings possible—as well as the many other advantages of the vantainer system previously dis-

On many railroads the volume of piggyback business has reached the point where a saving of a few dollars per trailer would justify the installation of a 30-ton yard crane. The capacity of a TOFC transfer yard could be increased materially by the speed and flexibility of crane loading and unloading. Since it is possible, with this system, to serve a longer string of flat cars with a crane than is practical with rear-end loading, additional capacity can be gained by further increase in lengthening the craneway when justified by increased business.

Conclusion: To obtain maximum service benefits and lowest operating cost in the interchange of freight between carriers, it is necessary, in the author's opinion, for railroads to realize the opportunities presented by a universal system involving standard sizes of shipping containers. They should develop and encourage ways, in cooperation with other carriers, to further the general adoption of this system of con-

#### Automatic Door Openings Reduce Plant Costs

Anyone—businessman or housewife—would gladly spend a few dollars now to save spending many more dollars at a later date. That's exactly the situation when money is expended to install Stanley Automatic Door Controls to operate plant doors automatically. During many years of efficient performance, Stanley Magic Door Controls will save an amount of money far in excess of their initial cost . . . by conserving conditioned air, saving time by speeding up traffic, reducing operating and maintenance costs and providing other benefits.



#### Low-Cost Investment

If you are interested in a low-cost investment that will pay big dividends for many years to come, investigate Stanley Magic Door Controls and Operators, products of a quarter-century of successful experience. The Stanley Magic Door Rep-



resentative in your area is familiar with plant traffic problems and how to solve them. He will gladly make a tour of your plant to point out door locations where money is now being lost because doors are being operated manually. He will produce facts and figures to convince you that Stanley Automatic Door Controls can prevent those losses. Without cost or obligation, call The Stanley Magic Door Representative and reap the benefit of his extensive experience. In the meantime, write to the address listed in the advertisement on this page for more complete information about Stanley Magic Door Controls.



### Install STANLEY automatic door controls

Profits escape through  $\emph{manually}$  operated doors when . . .

- / Doors open too long cause loss of conditioned air
- Trucks bump doors open, damaging doors and equipment
- √ Traffic is slowed and time is wasted
- / Drafts from open doors cause employee illness and absenteeism
- Changes in temperature or humidity damage products Stanley Magic Door Controls can prevent this profit loss. Can be installed on any new or existing door—or combination of doors—that swing, slide or fold.



Sales and service representatives in principal cities in the United States and Canada.

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY



This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • drapery, industrial and builders hardware • door controls • aluminum windows • stampings • springs • coatings • strip steel • steel strapping—made in 24 plants in the United States, Canada, England and Germany.

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#### **FERGUSON CONVEYORS**

. . . coordinate MEN, MATERIAL and MACHINES



- ► TO REDUCE YOUR UNIT COSTS BY ELIMINAT-ING MANUAL HANDLING
- ► TO KEEP YOUR MATERIAL MOVING WHILE IN PROCESS
- ► TO CARRY OUTPUT OF ONE DEPARTMENT TO ANOTHER
- ► TO GET MORE IN AND OUT OF YOUR PLANT AT MORE PROFIT TO YOU

Write, wire or call us for more details on the job that FERGUSON gravity or power conveyors can do for you, and let us bid on your requirements.

Ferguson

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#### **DETERMINATION OF SIZES . . .**

(Continued from page 86)

The problem of selecting commodities to be used for this analysis was a formidable one. Data on the height, depth and width of commodity packages were obtained after much effort and at a cost which made it necessary to resort to sampling procedures. It was found that 8.6% of all the physically containerizable commodities accounted for 64.1% of the revenue earned by these commodities.

There are six initial feasible orientations of a package in a container, if the package contains a commodity which does not restrict the position of the package. On the other hand, if the package contains a product like glassware and must be loaded "this side up", the position of the package will be restricted to probably two loading patterns.

It was initially thought that for a given size package the losses would decrease as container sizes increased. It was interesting to discover that the loss variation followed a periodic pattern.

#### Sealed Layouts for Hand-Fitting

Another disadvantage associated with containerization is the cubic loss in the ship due to wall thicknesses of containers and the broken stowage occasioned by the difficulty in stowing containers perfectly in different storage compartments. To study this problem scaled layouts of stowage compartments and scaled templets of 15 different size containers were used to determine stowage losses.

Before this analysis, it was thought that the smaller the containers, the smaller the ship-space losses. However, it was found that not only was that not true, but that here to there is a periodic-like variation in the space losses. It was also found that the enormous space losses which were experienced with full containerization in hatches of this type are typical of those in all cargo ships. It represents strong evidence for the need of ships specially designed to accommodate containers.

FLOW

# QUICK! "Call the Deluxe Dealer— we have a shelving problem!"



This poor fellow hasn't a place for everything and everything in its place. Matter of fact, there seems to be a place for nothing. Your shelving problems can't possibly be this preposterous, but if you want to talk about them with an expert call your Deluxe Steel Shelving dealer. He's nearby, ready

to give you on-the-spot shelving layout service. He will engineer efficient, flexible shelving installations and supply you with additional shelving racks as fast as you need them. Deluxe dealers are backed by the finest designed and sturdiest built shelving.

#### These Deluxe features allow you to install Deluxe shelving at lowest cost.

- 1. One-piece bin type uprights-for greater rigidity, faster erection.
- 2. Boltless adjustable shelf brackets-complete adjustability without tools.
- 3. Snap-in dividers-for quick flexibility.
- 4. Factory-embedded shelf reinforcing-to cut down installation time
- 5. Coped shelf corners increase storage capacity.

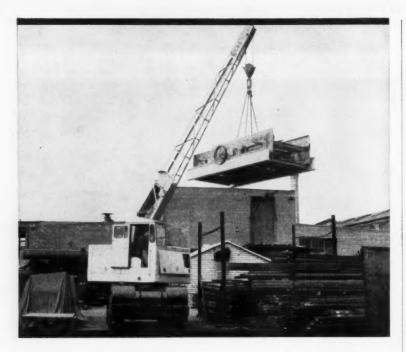
DELUXE METAL FURNITURE COMPANY · WARREN, PA.

A Division of the Royal Metal Manufacturing Company

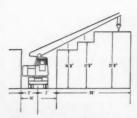
Look for your Deluxe dealer under Shelving in the yellow pages of your telephone directory or write to the factory for the name of the dealer nearest you and the colorful "Shelving Reference Manual."



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# Just one trip down a narrow aisle and you'll be married to your Coles Crane



Short, compact chassis, and cantilever boom on high A-frame permits close-quarter maneuverability, high stacking and full use of cubic storage area.



WRITE FOR BOOKLET "101 Cost-Cutting Ways"

Now, available L. P. G.-, diesel-, or gasolineelectric powered in capacities from 5 to 50 tons. Available on long term lease arrangements.

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#### WORK MEASUREMENTS ...

(Continued from pg. 69)

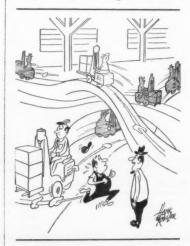
In planning an expansion of operations or a new enterprise, you can predict handling costs in this way. Multiply the standard performance rate (dollars per workunit) by the number of workunits you expect to perform in accomplishing the project. If, for example, you plan to increase your workload from 100,000 work-units to 200,000 work-units, and your standard performance rate is \$.25 per work-unit, you must increase your budget for material handling expenses by \$25,000.

In arriving at performance rates, it is important to define clearly the handling costs (payroll, rent, fuel, power, materials, depreciation, equipment maintenance, etc.) which are to be taken into account. It may be advisable to exclude certain handling costs which form an integral part of a manufacturing process; handling work performed in this process should also be excluded from the handling work-unit count.

#### How Do You Choose A Work-Unit?

The choice of work-unit is crucial. It must be a true index of the useful work performed by each function.

Material handling men do not agree on what is an acceptable unit. Some wish to use a factor computed by dividing the volume



Traffic in our plant has sure speeded up since that highway engineer took over our handling.



Combine Sanitation, Large Capacity, Adaptability, Low Power and Maintenance Costs FOR MULTI-PURPOSE
HANDLING AND PROCESSING
OF BULK MATERIALS



#### AJAX OPEN AND CLOSED PAN LO-VEYORS

Ajax Pan Type Conveyors are made in lengths from 3 ft. up. They are available with open pan, or booted covers to safeguard critical processes or formulas against contamination. Conveyor pans can be arranged for simultaneous screening, washing, drying, cooling and other operations.

#### AJAX SCREENS



Ajax Screens meet the ever closer limits of standardization in graded materials. They provide accurate separation, high capacities, minimum floor space, long cloth life and low power costs.

#### AJAX PACKERS



Ajax Packers are used for compacting bulk materials into bags, cartons, boxes and drums. Self-contained and easily integrated in production lines.

#### AJAX TUBULAR LO-VEYORS



Tubular construction provides sealed, gas tight operation in closed systems under vacuum or pressure. Diaphragm seals can be used where tube passes through walls of processing plants.

#### AJAX SHALER SHAKERS

The Ajax Shaler Shaker is in automatic balance. Lo-Veyors can be set on floor or hung from ceiling or wall without heavy anchorage.



#### AJAX VIBRATING LO-VEYORS ARE SELF-CONTAINED

Ajax Vibrating Lo-Veyors are self-contained and require little headroom for drive and pan. They are easily and quickly installed on or below floor levels, or suspended from walls or ceilings.

Stringy, elongated, abrasive, fine or coarse mesh materials never hang up while being conveyed in Ajax Vibrating Conveyors. The positive upward and forward tossing action keeps materials flowing freely and evenly.

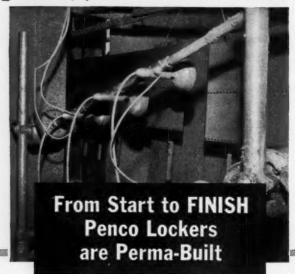
Made in a wide range of sizes and lengths, they are being used from beginning to end in progressive chemical processing. Write for Bulletin 39.

AJAX FLEXIBLE COUPLING CO. INC.

Representatives in Principal Cities

WESTFIELD, N. Y.

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Call it a Ransburg unit, if you want to be technical... or just "beauty treatment—Penco style." The important fact is that this electrostatic spraying unit is one of the processes that mean finer and better-looking Steel Lockers for your office, plant, school or institution.

Its spraying "bells" use the principle of magnetic attraction between electrified enamel mist and electrified steel. They assure an even coat of enamel to every steel sheet that goes into Penco Lockers, Shelving and Cabinets.

The smooth, lustrous enamel is perfectly and permanently bonded to the phosphate undercoat, enemy of rust. Then, sprayed with gleaming enamel and baked to enduring hardness, Penco lockers reward you with permanent fine appearance as well as sturdy service even under rugged usage.

Want that kind of locker durability in service and appearance? Need special type lockers? Just write for Catalog F-57-1.

#### **And There Are Special Services**

Planning—Ask for Penco's free engineering service. Let Penco's experience help you in the selection and arrangement of equipment to do the job.

Dependable Service —As a division of Alan Wood Steel Co., Penco is assured a full supply of high-quality steel.



**PERCO** METAL PRODUCTS DIVISION ALAN WOOD STEEL COMPANY OAKS, PA.

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#### WORK MEASUREMENTS

(Continued)

of each lot of material by its specific gravity. Others suggest that "line-items selected" is a suitable work-unit for warehouse operations. The possibilities are many.

The trouble with most operations is that various types of material are handled, and the form of the material usually changes in the manufacturing process. If you manufacture television sets, you cannot gauge your material handling effort by counting the number of sets you make. You may, for instance, by producing several models of different sizes.

With this problem of infinite variety of form, shape and composition, the only factors you can use are those physical characteristics which are common to all materials. Matter is identified as having mass and displacement (in practical terms, "weight" and "cube").

#### Are Other Factors Suitable?

Consider whether any other factors are suitable. How about number of pieces or containers? Piece-by-piece handling of a 1000 carton shipment will almost certainly cost more than mechanized handling of the same shipment made up into 50 pallet loads.

You are, to a certain extent, free to choose the size of your unit-load. You may instruct your supplier to make shipments into unit-loads before delivery; you may elect to consolidate into unit-loads in your own receiving section; or you may prefer to handle the individual items piece-by-piece. Your decision will largely depend on the personnel and equipment you have or can procure and also on the physical characteristics of the material.

It is obvious, then, that "number of pieces" is a fluctuating element. As your aim is to relate variable costs to an invariable work-unit, the work-unit you select should not include any factor which you are able to modify. The area between the "expended effort" and the "irreducible effort" is your domain

# CAN LOOK LIKE THIS TORAGE AREA



Racks 24 feet high in automative plant receiving area, serviced by crane with forks. Note sections supporting pallets



Heavy steel dies conveniently handled in P-S racks.



Store aluminum, brass, steel, copper-light or heavy.

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#### **Adjustable** GE RACKS

Easy to Assemble

For any storage need-plant, warehouse, store-inside, outside, anywhere—for any type materials, large or small, light or heavy—steel, copper, aluminum, brass, wood, brick, food, anything.

Shipped to you ready for assembly in a few minutes, without bolting or welding. Use in any size area. Built to any height for use in single, double or multiple sections. Adjust shelves to any level.

Double slots set at angle on vertical uprights give safe, extremely rigid non-sway support. Adjustable members lock in place by PS Powerfully Strong locking mechanism at level you desire.

Built to any capacity with braces welded between front and back uprights at depth you specify. Racks can be galvanized for outside use.

Make PS Powerfully Strong adjustable storage racks yours for all-purpose storage.



#### DESIGNED AND MANUFACTURED BY lmer Shile 16012 Fullerton Avenue, DETROIT 27, MICH.

126 Dartmouth St., BOSTON 16, Mass., COmmonwealth 6-0370 • 1209 Burlingame Ave., BURLIN-GAME, Calif., Dlamond 2-0823 • 15 South Austin Blvd., CHICAGO 44, Illinois, AUstin 7-8599 • 857 Leader Bidg., CLEVELAND 14, Ohio, Superior 1-3235 • 3301 Walnut St., DENVER 5, Colo., Alpine 5-3984 • 202 Genese Benk Bidg., FUNT, Milchigan, CEder 8-6881 • 2609 S. Broadway, FORT WAYNE, Indiana, KEnmore 5408 • 835 No. Capital Ave., INDIANAPOLIS 4, Indiana, MEiross 5-2587 • 6440 Fieer St., LOS ANGELES 22, Calif., RAymond 3-3733 • 647 W. Virginie St., MILWAUKEE 4, Wis., BRoadway 1-9840 • 5107 Columbia Ave., ST. LOUIS 9, Mo., PRospect 1-1474

# look beyond the price...

# you'll see that you get the most for your money in MATHEWS CONVEYERS



A push button order filling system in which an operator at a control console directs the flow of material from 66 storage lines. Photo courtesy of Gallo Sales Co.

Most plant operating people, when they buy conveying systems, are looking for the equipment that is best for their plant—equipment that is designed to meet their individual requirements. They are looking beyond the price . . . looking to quality—to dependability. Mathews engineers have been designing and building conveying systems for over 50 years, and a great amount of this equipment has been applied in metalworking plants. This is why operating people everywhere have an extra measure of confidence in Mathews equipment—and why you see Mathews Conveyers in metal-producing and fabricating plants everywhere.

#### MATHEWS CONVEYER COMPANY



GENERAL OFFICES . . . . . . . . . . . ELLWOOD CITY, PENNSYLVANIA
PACIFIC COAST DIV. . . . MATHEWS CONVEYER COMPANY WEST COAST,
SAN CARLOS, CALIFORNIA

CANADIAN DIVISION . MATHEWS CONVEYER COMPANY, LTD., PORT HOPE, ONTARIO.

#### ATHEWS

Fifty Years of Leadership in Mechanized Handling

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#### WORK MEASUREMENTS

(Continued)

—the natural habitat of the material handling man. This is where you detect and eliminate wasted effort.

Time and distance are likewise reflected in your handling costs. You are concerned with time to the extent that it costs money: warehouse rental, labor, demurrage, interest, etc. Distance may or may not affect costs, depending on handling methods used. Incoming shipments may be unloaded manually onto pallets and transported 200 feet by fork-truck to a storage area. Or containers may be transferred by gravity wheel conveyor directly from the unloading platform to the point of storage. Distance is the same in both instances, but handling costs are different. Longer distances often mean higher handling costs.

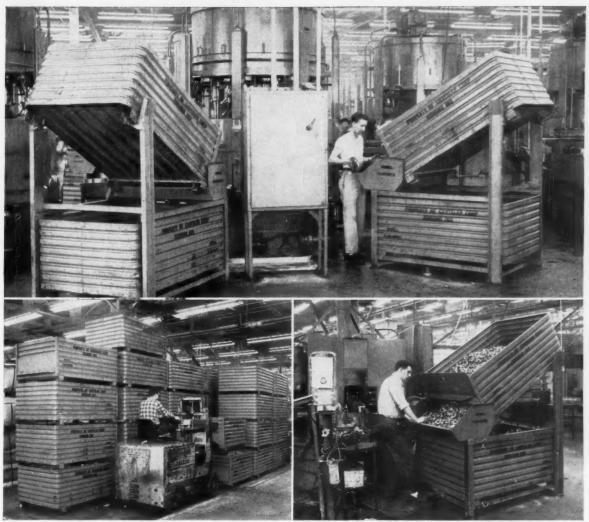
#### Weight and Cube

Of the factors discussed, only weight and cube are intrinsic and, generally, unalterable. It is not practicable to work with two different units; yet neither weight nor cube alone is acceptable. Shipping companies have had to deal with this problem for years. They think in terms of "light" and "heavy" tonnage and use the "shipping ton" of 40 cubic feet. This is, weight is equated to bulk at the rate of 1 ton per 40 cubic feet, and charges are computed by applying the rate per ton to either the "deadweight tonnage" or "measurement tonnage", whichever is greater.

Rail freight charges, on the other hand, are based on weight, with due allowance made in the freight classification ratings for the bulk-to-weight ratio of the commodity.

The shipping companies' method lends itself better to general use as it does not require a comprehensive index (as provided by the freight classification), and tonnage can be computed directly from weight and cube of the shipment.

Just as we use horse-power to measure the rate of doing work,



Photos through courtesy of Chrysler Corporation.

Preconceived Mass Handling is possible when a manufacturer designs and builds a plant from the ground up. That's what the Chrysler Corporation did at Kokomo, Indiana. The entire plant was constructed to meet the requirements of a specific operation in the most modern and efficient manner possible. They selected the Powell Flowmatic\* materials handling system . . . by far the most economical and fastest operating mass handling equipment available today. Literature upon request.



#### POWELL flow-mation\*

SYSTEMS-

The Powell Pressed Steel Co, Dept. 2-117 Hubbard, Ohio

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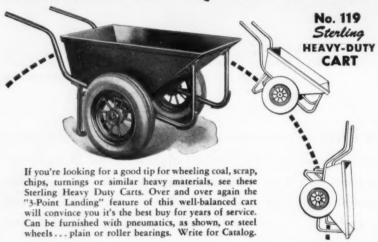
size or type of drumsingle or multiple.

WRITE FOR

CATALOG

INDUSTRIES, Inc. MARVEL 2226 CLEVELAND ST., EVANSTON, ILLINOIS

#### YOUR BEST Tip IN CARTS



3 SIZES AVAILABLE:

No. 119.... No. 120... . 9 cu. ft. 111/4 cu. ft.

STERLING WHEELBARROW CO., Milv



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#### WORK MEASUREMENTS

a "man-load" can be used to measure handling effort. A normal adult man can comfortably lift and carry a one-foot cube weighing 50 pounds. This corresponds to the average density assumed by the shipping companies in equating one ton deadweight to 40 cubic

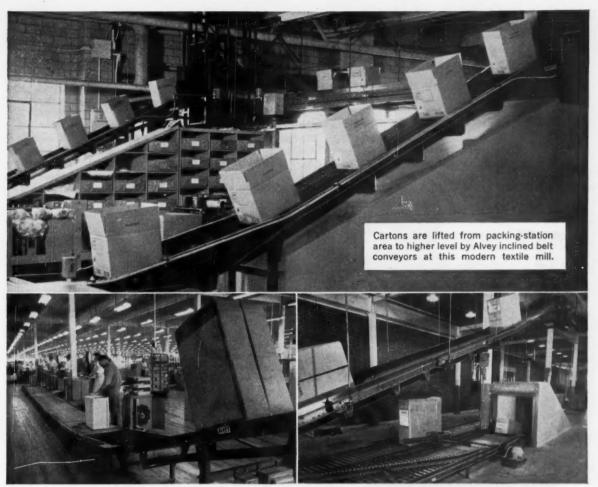
This suggests a method of evolving a practical work-unit. If you convert weight into cube at the rate of 50 pounds equals 1 cubic foot, all shipments can be measured in terms of cubic feet. The procedure consists of computing the cube by this convention, then comparing the "computed cube" with the "actual cube" and selecting the greater of the two figures. A shipment weighing 200 pounds represents a "computed cube" of 4 cubic feet (200 divided by 50). If the actual volume of the shipment is 6 cubic feet, it is counted as 6 work-units (6 being greater than 4). On the other hand, if a shipment of the same volume (6 cubic feet) weighs 600 pounds, the "computed cube" is 12 cubic feet, and, as 12 is greater than 6, the count is 12 work-units. (See Figs. 2 and 3).

You will need to organize a convenient method of recording the weight and cube of each shipment at the operating level. You may use carrier's bills, bills of lading, Express receipts, waybills, packing notes, etc., as your source documents.

Shipping documents usually



Okay! Okay! So you're not over-weight—but couldn't you put in for a bigger chair?



At left, cases are weighed and checked along spur branch lines, then moved onto belt conveyor en route to storage or shipping. "Traffic cop" (at right) assures smooth textile traffic flow by giving right-of-way to one packing case and halting the other until intersection is clear.

#### profits get a big lift ... when you install an ALVEY conveyor system

Your profits just naturally go up ... because your materials handling costs go down ... when you install a completely integrated, Alvey-Engineered conveyor system. Bales . . . bolts . . . bobbins . . . doff boxes ... rolls ... cartons ... all move smoothly, efficiently, safely, via Alvey. Thoroughly experienced in textile mill operations, Alvey engineers apply their training and skill in analyzing your plant operations. Then, they recommend a conveyor system that meets your needs.

Lower your handling costs, speed up production, and widen your profit margin ... call in an Alvey engineer to study your individual problem. There's no obligation for consultation!

CONVEYOR MANUFACTURING COMPANY

9299 OLIVE STREET ROAD . ST. LOUIS 24, MISSOURI . Branch Offices in Principal Cities

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NOVEMBER, 1957

#### WORK MEASUREMENTS

(Continued)

show only the weight, not the cube. There are several excellent ready-reckoners available for calculating cubic measurement. In most instances, though, a mental estimate will suffice. After a little practice, almost anyone can calculate cube with a fair degree of accuracy. At the end of the selected

period you abstract the recorded data from the documents and convert into work-units.

Figure 4 represents a summary of data for a department handling two functions, Receiving and Shipping. Figures 5 and 6 are charts based on the data shown in Figure 4; the same set of data was used to compile the "Effectiveness" charts in Figure 1.

As long as "work-unit" and "cost" curves follow a similar pattern, effectiveness ratio is not

impaired. If you examine Fig. 1 you will notice that the effectiveness ratio of the receiving function dropped below the lower control limit in June. A similar lapse occurred in Shipping in April. In both instances, a drop in production coincided with a rise in costs. Excessive deviations such as these call for immediate investigation and correction.

The division or grouping of your operations into reporting functions requires careful thought. The work-units you select should truly reflect the work performed by the functon and should be in the simplest form which will fit

your purpose.

The "handling work-unit" proposed works only where material handling is the main activity: for example, in receiving, warehousing and shipping. There is no difficulty, however, if you wish to obtain overall effectiveness of several functions by using different workunits. You merely express total "standard" costs as a percentage of total "actual" costs for all included functions. In this manner you can correlate such dissimilar functions as packaging (which might be measured by "number of containers packed") and stock records (measured by "line-items posted").

You will find your work measurement program a useful managerial tool. You should aim at getting the information you need with the least amount of effort. You will get most value for your money if you make it simple for personnel to compile the required data at the operating level, investigate deviations promptly, and take effective action to rectify unhealthy conditions.







#### Big Booster

Detroit, Mich .- A department store makes big problems out of little ones, and saves money! Instead of handling parcels for home deliveries one at a



time, they're collected in 6 by 5 by 2 foot rolling carryalls, which are lifted aboard delivery trucks by hydraulic tailgates. The store's fleet of liftgate trucks works hard. Every day each lifts or lowers at least a hundred loads of furniture. appliances, and parcels; and the more they lift, the more they save.

Circle 202 on Reader Service Card

#### Fast Punches And Fancy Footwork

Oshkosh, Wis .- Size isn't everything, excelsior maker proved to himself when he



matched a little crane against his 3/4-yard crawler-crane. With its fast swing, pinpoint grappling, and snappy mobility, the peppy little one beat the musclebound crawler on its own lot by filling

3-cord wagons with 8-foot poplar logs in six minutes, faster than the mill could take them. Then the little one went down to the siding, and while waiting for his competitor to crawl down there, began to unload 18-cord rail cars in an hour and 25 minutes each. Between events, the winner darted around the vards, restacking timber here and there, saving money and making friends wherever it went.

Circle 203 on Reader Service Card

#### To Pick Up Long Sticks

Libby, Montana—A lumber concern and a straddletruck maker developed a grappletruck for moving long poles, pipes, and piles. The grapples work hydraulically, singly or together, and they can be attached to the truck either permanently or temporarily. Loads can be picked up without the usual three men to help, and once loaded, cargoes can't spill, being embraced all



HOT OFF THE PRESS! Eight illustrated, file-size brochures covering all types of A-F Engineered Conveying Systems and Equipment.

Profusely illustrated with photographs of actual installations and containing a wealth of information-blueprints, specifications, facts on the proper application for each type of conveyor, etc.—each brochure is sure to give you many new ideas as to how your products handling problems may be solved.

Separate brochures are devoted to the following types of A-F Engineered Equipment:

- Live Roller Conveying Systems
- Gravity Roller Conveying Systems

YOU CAN SEE

THE SUPERIORITY OF

- Rollers for Gravity and Live Roller Conveying Systems
- Belt Conveying Systems Apron Conveying Systems
- Chain Conveying Systems
- Drives and Take-Ups
- Inclined and Vertical Conveying Systems

In today's economy, complete conveying systems are taking on added importance . . . cutting costs and increasing profits by integrating all factors of production to tap the full potential of plant, machinery and personnel. Any of these brochures could lead to valuable savings for your company-and they're yours FREE.

Simply write us on your company letterhead, mentioning the brochures you'd like to receive.



#### A-F ENGINEERED CONVEYING SYSTEMS

Also Pre-Engineered Conveyors-Wheel, Trolley, Roller, Belt Metal Cleaning and Processing Machines

THE ALVEY-FERGUSON CO., 438 Disney St., CINCINNATI 9, OHIO and Azusa, California Circle No. 4 on Reader Service Card for more information



around by the grapples. Bolsters and other supports are not needed. The truck handles everything from a single stick up to loads

twice the size formerly carried on bolsters.



Circle 204 on Reader Service Card

#### STREAMLINED FOOD DISTRIBUTION . . .

(Continued from page 101)

trains, with fork trucks handling only the large pallet-sized orders. The two-way radio system really keeps orders rolling. When a stock selector reaches a commodity slot that is shy of the amount he needs, he radios from his tractor and a fork truck replenishes the item from bulk storage. Exceptionally fast-moving items are kept close to the shipping area. That keeps handling to a minimum.

There is no such thing as "lost goods" at S & W. No item is ever just deposited someplace where it may slip somebody's mind. If is no room for an item at its regular location, the trucker spots it at some convenient spot, then immediately radios adminstration to report where it was placed. This information is recorded in a special book for that purpose.

#### **Delivery of Orders**

Completed orders are delivered on trailer trains to their designated areas on shipping floors. The trailers are spotted at shipping doors to be loaded by hand into the trucks. At this point a shipping clerk stamps the floor copy of the invoice "delivered". Marked invoices are air-tubed back to the accounting section, and posted as accounts receivable.

Inventory control is simple and accurate. Punched cards are used to represent cases of merchandise. These cards are kept in file tubs, and are put in sections of trays carrying their code numbers. The highest numbered card is at the rear. When a case of merchandise goes into an order, the last card for that item is pulled from the file tub. A look at the number of the last card in a tray tells at a glance how many cases of that item are in inventory.

People at S & W are mighty happy with their new operation. "I wouldn't trade our warehouse facility for any I've even seen," says Jack Buchanan, S & W warehouse manager, "and that covers a lot of ground."

#### SHORT RUNS MADE AT MASS-PRODUCTION COST

#### **AUTO-NAILERS**

Speed Production of

SKIDS SHOOKS **PANELS** CRATES PALLETS

Makes and drives its own nails in accurate lengths up to 2% inches, as fast as 3 NAILS A SECOND. Auto-Nailer nails stay put ... won't back out.

Multiple installations may be used with single or multiple remote control. Hurricane drive eliminates splitting. Controlled depth drive; controlled countersink.

We will gladly make a free engineering study frank and unbiased-relating Auto-Nailers to your production problems. Write us.



CATALOG

FREE

AUTO-NAILER CO., 269 Marietta St., N.W., Atlanta 13, Georgia Circle No. 13 on Reader Service Card for more information

#### FIRST CLASS SHIPPING ...

(Continued from page 87)

tearing and abrasion). Covers for 124-inch long loads weigh 13 pounds and cost \$2.95. Those for 224-inch loads weigh 22 pounds and cost \$5.00.

For construction of the load, the strapped and covered packages were easily loaded onto the flat car by a standard heavy-duty fork truck. They were stacked two wide and two high. Four-by fours served as bearers on the car floor and between packages.

When all twelve of the packages in the shipment were in place, they were interlaced with lengths of steel strapping. Steel bands were fed through spaces alongside the center 1 x 2 stickers in both top and bottom packages, tying the two units together. Then, outer bands, completely encircling the four-package stacks, were applied. Lengths of wood lath were used to secure the exposed ends of the covers to bottom edges of packages. The method of installation of the covers provides water

resistance, but allows escape of condensation.

As a last step, the 18-inch side stakes were set in place.

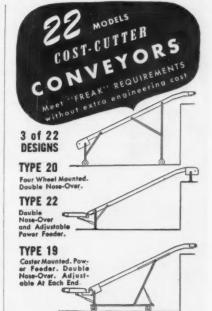
Lumber company representatives and railroad men inspected the wood during a Chicago stopover and again at the destination.

The lumber was found to be in good condition at both points.

In addition to shipping economies, the shipment pointed up several advantages for lumber buvers:

- Faster unloading saves time and labor. It takes several hours for a yard crew to hand-unload lumber from boxcars and only 40 to 50 minutes to unload a flat car shipment.
- 2. Size of unit can be specified to suit the convenience of the consignee.
- Inspection of an entire load may be made before unloading is started.
- Covered loads can be stored outdoors until the lumber is needed.

Photographs courtesy of Bemis Bro. Bag Co. Circle 181 on Reader Service Card



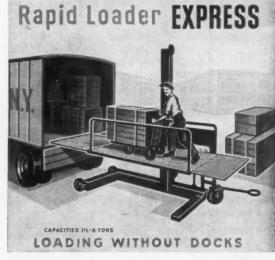
Aluminum or Steel
 Belt Widths. 8" to 24"
 Lengths 4' to 40'

IMPORTANT! Every Cost-Cutter is Set Up and Test Run in our plant to assure Proper Performance. Send for BULLETIN 103

NEW LONDON ENGINEERING CO.



NOVEMBER, 1957



NEW! A rugged, time-saving, movable PLATFORM ELEVATOR TRUCK for loading/unloading or storing-up any material. Capacities up to 1500, 2000, 3500, 6000 lbs. with electric cable or hydraulic drive, operated by one man. Easy and safe to handle. Write for catalog with complete information and reference list.



Circle 197 on Reader Service Card for more information



MET-L-ITE ALUMINUM DOCK BOARDS are engineered to your dock requirements. All materials and workmanship guaranteed one year.

- Longer Life
- Greater Economy
- Durability—Built for Rugged
- More Corrosion Resistance
- All-Aluminum Design
- **Newest Aircomatic Welding Techniques**

Write for Information.

OLTZ BROTHERS, Inc

1507 INDIANA AVENUE EXCLUSIVE DEALERSHIPS IN SELECTED AREAS

Circle 169 on Reader Service Card 170

#### HAWAIIAN SUGAR ...

(Continued from page 93)

openings. The combined storage capacity is 84,000 tons.

Facilities at another plant consist of four steel silos, 76 feet high and 80 feet in diameter, providing a total capacity of 40,000 tons. Incoming sugar is received at an elevated scale house where it is weighed before being dumped into hoppers below the floor. It moves from the hoppers to a belt conveyor system which transports it up a series of inclines to the top of the storage warehouse. There, another set of conveyors delivers it into any one of the four silos.

When a steamer is loaded, sugar is drawn from two silos at a time through central discharge tubes. High loading rates are further insured by the use of 8,000 pound capacity clamshell buckets operated by overhead traveling cranes. Clamshells pick up the sugar in the silos and drop it down a sectional discharge tube which extends through the center of each silo. These tubes are six-foot lengths of steel pipe, six feet in diameter, and are added section by section as the sugar builds up in storage. This process is reversed, with sections removed as the sugar level falls during outloading.

From the base of the discharge tube, sugar is carried on parallel conveyors to the top of a tower where it is transported to gantry mounted conveyors that deliver through a downspout at the end of the boom. It is then sprayed into all parts of the hold for even distribution.

There are nine steel silos at the Crockett processing plant, having a total capacity of 100,000 tons. Four traveling ship gantries unload sugar at 700 tons per hour. and deliver it to a receiving conveyor which transports it to a scale tower for weighing and sampling. From there sugar is carried via inclined belt conveyors to the top of the storage warehouse where a series of conveyors delivers it to anyone of nine storage

#### Low-cost marking attachment pays for itself in weeks...saves thousands of Severy year

Imprints 1, 2 or 4 sides of cases in single pass



Friction-driven ROLACODER markers do your marking automatically . . . save cost of manual stencilling or stamping. Designed for easy do-it-yourself installation on existing conveyor lines, casesealers, etc. They use quickchange rubber type or dies, hold 8-hour ink supply.



ROLACODER twin-action markers

for imprinting codes and lot numbers

on 2 or 4 sides of cases simultaneously

... without requiring cases to be turned.

ROLACODER single-side marker for accurate spot imprinting of brand names, varieties, code-dates, lot numbers on cases, cartons, fibre drums, bags, etc.

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In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal

**Automatic Production-Line** CODING, MARKING. **IMPRINTING** MACHINES

Circle No. 66 on Reader Service Card for more information

FLOW



#### **GRUMMAN AIRCRAFT'S "ONE-MAN GANG"**

This low-cost Lorain Self-Propelled Crane, the 7-ton "SP-107," is really a "one-man gang" in any plant yard as it moves quickly about lifting and transporting heavy loads — all under the control of one man. It is shown with a 30-ft. boom, loading a fuselage center section as part of a salvage operation in the yard of Grumman Aircraft Engineering Corporation, Bethpage, L. I. This is Grumman's 3rd Lorain material handling specialist.

The SP-107 is a new type of material handling tool. Grumman enjoys many advantages in their yard material handling operations because of it. You, too, can have these advantages. Read about a few of them below:

Carrier is 8-ft. wide with 8-ft. wheelbase. This close-coupled, square design gives you the full-rated lifting capacities "on rubber" throughout 360° swing — no time-consuming outriggers.
Powerful 4-wheel drive provides maximum trac-

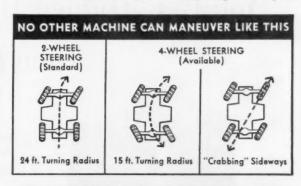
 Powerful 4-wheel drive provides maximum tractive effort to take the SP-107 anywhere you want to go, on roads or not.

The available 4-wheel steer permits shorter turning radii — even "crabbing" sideways for maximum maneuverability.

• 3 or 6 travel speeds, applied through a smooth, automatic transmission and torque converter, permit travel up to 15 m.p.h.

Easy-acting hydraulic controls.

• Fully convertible to dragline, clamshell, shovel or hoe for "bonus" digging and maintenance jobs. The diagram below shows the extreme maneuverability of the SP-107 with 4-wheel steering. Can work in closer quarters. Your Thew-Lorain Distributor can demonstrate this new material handling tool to you.



THE THEW SHOVEL CO., LORAIN, OHIO, U.S.A.



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#### You Get "Hidden Horsepower"

# from **GOULG**BATTERIES



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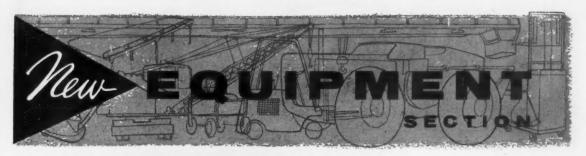
#### Behind every Gould Battery is the industry's largest field engineering staff

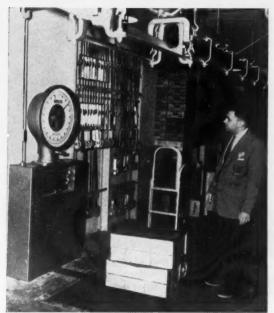
Gould engineers train your personnel ... set up preventive maintenance programs ... establish efficient battery charging methods ... and otherwise help you make use of the "Hidden Horsepower" in every Gould Battery. Specify Gould and see.

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Always Use Gould-National Automobile & Truck Batteries More Power to you from Gould

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#### Double-Duty Scale

The functions of a track scale (weighing hanging units) and of a platform scale (weighing loaded trucks and pallets) were combined by Detecto Scales, Inc. into a two-in-one unit with a single dial. The combination has resulted in reduced operating expenses. Construction of the scale lends itself to location in important traffic lanes where hanging units can be conveyed by overhead track, weighed, and track-transported to the next operation. Units on trucks can easily reach the scale, where they are weighed according to conventional methods. The Detecto Combination Track and Dormant Platform Scale is a special-order item built to accommodate certain types of operation. Its maximum gross weighing capacity is 12,000 pounds.

Circle 278 on Reader Service Card

#### L-P Gas For Continuous Operation

Lift Trucks, Incorporated, manufactures a 4000-pound capacity Hydrolectric pallet truck using a Ready-Power L-P Gas unit. Continuous operation is claimed for Model W-12—the L-P fuel tank is refilled, a self-starter puts the truck in operation, and the unit automatically adjusts itself to the load. It has 2 speeds forward and reverse:  $3\frac{1}{2}$  mph empty and  $2\frac{1}{2}$  mph loaded. A dynamic brake is operated from a handle push-button, and a mechanical parking brake is automatically applied when the steering handle is released.

Circle 279 on Reader Service Card



#### New Line Of Front-End Loaders

Model ML-153, a 4-wheel drive, 13/4 yd. capacity unit, is the first in a line of front-end shovels developed by the Thew Shovel Co. Trade-named Moto-Loader, the machines are available with either gasoline or Diesel power. The ML-153 utilizes an Allison 3-speed torque converter with a 2.5 to 1 ratio; top speed is 21.4 mph. For ease of operation and precise control of loading and digging, 2 travel direction pedals—one forward, one reverse—provide one-foot operation, with an accelerator under each pedal.

Circle 280 on Reader Service Card



"Our KARRI-GO saves us time and money," says Mr. Hettinger. "It does many jobs faster, more economically than our three big cranes. We use it indoors and outdoors . . . for removing and installing underground cable, 12" pipe, valves, large valve bonnets and gates. Carries motors, speed-reducers, compressors, pumps and other machinery to and from repair shop. Loads and unloads trucks; stacks material for storage." ASK FOR BULLETIN NO. 73E.

> Sold and Serviced by Responsible, Well-Equipped Distributors throughout the World.



SILENT HOIST & CRANE CO.

888 63rd Street, Brooklyn 20, N. Y.



#### LIGHT WEIGHT MAGNESIUM

#### TRUCK RAMPS

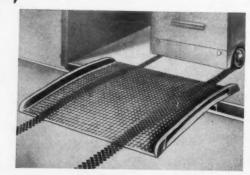
Speeds-Up All Dock Operations: Reduces Accidents: Saves Manpower

BRIDGE-BUILT EXTRA STRONG

SIDE AND CENTER TRUSSES-

ALL WELDED RUGGEDLY CONSTRUCTED

- One Man Can Operate
- Full Length Hand Grips Safety Tread: Non-Skidding Safety Curb Ends
- Safety Side Rails Saves Tires and Equipment



FOR EVERY LOADING and UNLOADING NEED

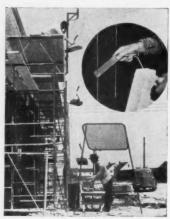


Circle No. 122 on Reader Service Card for more information

#### NEW EQUIPMENT SECTION

#### Portable Hoist Sets-Up Quickly

Designed for quick installation on the job, the Haynes High Hoist can be attached to buildings and scaffolding for hoisting materials needed by brick layers, masons, plasterers, roofers, carpenters, etc. Manufactured by Haynes Inc., this



hoist can be easily moved from leg to leg of the scaffolding by one man so that materials can be lifted directly to point of use. Has G.E. outdoor-type motor (meets the UL 4-hour rain test), a Quick Connect Hook for easy loading, and drive shaft bearings rated for 33,-000 hours of use. Safety features: Aircraft type cable (2000 pound test); extra drive belt; line hooks that won't come off under load; automatic clutch arm on top to stop line; safety screen to cover the operator. The whole unit, including boom and screen, can be transported in the back of a pickup truck.

Circle 211 on Reader Service Card

#### Vibrator Feeder Handles 24" Bowls



A type of vibratory unit, built and powered specifically to han-



Heavy material causing high maintenance? Read how Pacific Northwest Alloys

# Loading an alloy which averages 8,500 lbs/yd, cut repair costs 80%

#### THE BACKGROUND

Pacific Northwest Alloys, Inc., is a wholly-owned subsidiary of Chromium Mining & Smelting Corporation of Chicago. Their plant, located just outside Spokane, Washington, produces an alloy known as low carbon ferro chrome from African, Philippine and domestic chrome ores. This new fast-melting alloy is used in production of some of the new low-carbon stainless steels.

#### THE PROBLEM

Low carbon ferro chrome is heavy. An 8-inch chunk of it weighs nearly 100 lbs. Tractor shovels load this dense alloy by impact loading. Other tractor loaders pounded themselves to pieces moving the jagged, interlocking lumps. Maintenance costs grew so high, in fact, management insisted new machines be tried. Crawlers were con-

sidered, but proved too slow. Then, company officials heard about Michigan Tractor Shovels, obtained an in-plant demonstration.

#### THE SOLUTION

Four 16 cubic ft Michigan Model 12B Tractor Shovels now handle the work of five 14 cu ft old-style tractor loaders-and do it better, at far lower maintenance cost! Jim McBride, Mechanical Foreman, says "These little jewels have sure done a job for us! And maintenance has been only 1/5 that of the old equipment!" George Fegan, Quality Control Manager, especially commends the Power-Shift Transmission and shock-absorbing Torque Converter. Best of all, the two Michigan Model 12B's-working under continuously brutal shock conditions-load millions of pounds of this heavy hardto-handle alloy without trouble, month after month.

#### THE MORAL

Their high output leads to one conclusion . . . if Michigans can "take it", week in and week out, on this extremely tough job, they'll probably do well on your work too. See for yourself. Call your Michigan Distributor; he'll be glad to arrange a demonstration. You name the job!

Michigan is a registered trade-mark of

#### CLARK EQUIPMENT COMPANY

Construction Machinery Division 2445 Pipestone Road Benton Harbur 22, Michigan In Canada: Canadian Clark, Ltd., 51. Thomas, Ontario











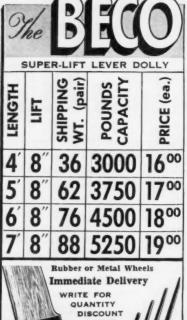
You get more, make more from the Rockwood Line. Every Rockwood product gives maximum performance, yet costs less! This adds up to better business, bigger profits for you!



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Distributors wanted Write today for catalog, full details







Circle 17 on Reader Service Card 176



Needs 30 Years Material Handling Experience

Specially Made For Your



in Use

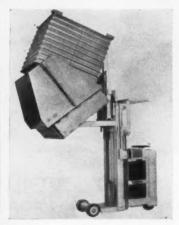
Circle No. 19 on Reader Service Card

dle 24" feeder bowls, has been developed by Vibratory Feeder Company. The unit, designated No. 20, incorporates the 3-spring suspension principle-springs are arranged in a near-vertical position for balance and steady flow. It is available in counter-clockwise as well as clockwise movement. Feeder bowls have also been designed for this unit.

Circle 212 on Reader Service Card

#### **Dump Box Opens** Hydraulically

A dump box attachment activated by a separately controlled hydraulic cylinder is available



from the Raymond Corporation for use on either their narrow aisle platform or straddle trucks. The cylinder, mounted at the rear of the platform or forks, elevates a broad hook interlocking with a mating hook on the box. As the rear of the box is raised, the bottom swings down, dumping contents. Amount of flow can be controlled by size of the opening; dumping may be done at any point in truck's elevation range. This attachment extends over the rear of the platform only 4" so truck can be used for stacking conventional skid loads in 6' aisles when not handling drop-bottom boxes.

Circle 213 on Reader Service Card

#### Handles Rugs, Other Long Loads

A variation of their standard 4wheel truck has been designed by M-H Equipment Co. primarily to



# Now...bulk ship liquids the safe and save way



Rolling up of U.S. SEALDTANK squeegee-cleans and completely empties contents from tank.

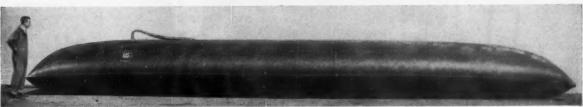


After dry-cargo haul, unrolling of U.S. SEALDTANK is done in a matter of minutes-converts truck for liquid cargo.



Ready to be filled, U.S. SEALDTANK extends the length of trailer for maximum load.

### ...with new, collapsible U.S. SEALDTANK



Extremely durable . . . completely weather-resistant, U. S. SEALDTANK adds new versatility to liquid storage. It eliminates installation costs and can be easily moved when empty. Fits any available space—indoors or outdoors.

#### Also eliminate costly built-in storage tanks!

Bulk-Shipping liquids in the revolutionary U. S. SEALD-TANK assures you of safer . . . lower-cost transportation. Made of a tough, synthetic rubber-fabric composition. You save money, too, because U. S. SEALDTANK eliminates the need for costly liquid equipment. This collapsible liquid package is easily anchored to any standard truck, barge or railroad car. Rolled up—to accommodate

dry-cargo hauls—it takes very little space, yet unrolled it holds up to 4000 gallons. It's the perfect way to ship ... and store vegetable oils, molasses, fish extracts and other agricultural and industrial chemicals. Find out how you can improve your liquid storage and handling operation. Write SEALDTANKS, United States Rubber Company, Providence 1, Rhode Island.



United States Rubber

Circle No. 200 on Reader Service Card for more information



now in wide range of sizes

OUT-WEARS MOLDED-ON TIRES-CUTS COSTS 65%

You get 50% longer life from Rapistan MB DEMOUNT-ABLE WHEELS. You cut costs, because MB tires are replaceable — in 3 to 5 minutes, and cost far less than new wheels or re-molding tires.

The secret of Rapistan MB Wheel's long life is in the

Reaction of Force is deflected toward the center of the tire, keeping rubber firm and dense, mini.nizing bulging and "chunking" out," reducing friction and wear. Available in 6", 8" and 10" dia. Watch for new 3" tread size in 10" dia. for high capacity use.



Write for New Bulletin MB-57 - FREE!



fastest growing name in casters

The RAPIDS-STANDARD CO.

28 Rapistan Bldg. Grand Rapids 2, Michigan



#### NEW EQUIPMENT SECTION

handle rugs (wool, fabric, linoleum). Basic width, 32"; lengths may be 40", 48", 56", or 60". Deck is 4/4 heavy kiln-dried oak



combined with formed steel channels. A latterally opposed superstructure permits a number of rugs to be placed on the truck so that they can be moved endwise and not fall off; yet the truck can be moved and maneuvered with ease.

Circle 214 on Reader Service Card

PICTURE Redhead seamless, solid steel conveyor pulleys. In diameters of 2" to 36" with faces of 6" to 168". Yours with

> call the Redhead.

2

GET

#### WRIGHT-HIBBARD TRUCKS available in all models



HIBBA

TRUCKS a dependable name

of world-wide fame now precision built by

Circle 22 on Reader Service Card 178

#### For Special Fume Problems . .



#### A CATALYTIC EXHAUST PURIFIER THAT WORKS WITH LEADED GASOLINE

When leaded gasoline\* is used in fork lift trucks and other equipment, dangerous carbon monoxide, hydrocarbons, exhaust fumes and odors can now be safely controlled with the new Oxy-Muffler, another member of the famous Oxy-Catalyst family of catalytic exhaust purifiers.

The Oxy-Muffler will give hundreds of hours of trouble-free service. If you have a fume problem with leaded gasoline, write for details on the new Oxy-Muffler now.

\*Where nonleaded gasoline or LP-gas can be used, the OCM Catalytic Exhaust Purifier is recommended.



#### OXY-CATALYST, INC. Wayne 1, Pa., U.S.A.

Catalysts for fume and odor pollution control, and waste heat recovery Circle 120 on Reader Service Card

quick delivery. No seams on surface, engineered to meet the exact-ing demands of all types of conveyors and power transmissions. In crown and straight faces. Write or call us. If you need Pulleys & Rolls fast, MERCURY INDUSTRIES, INC. (PULLEY & ROLL DIV.-DEPT. PR 11) HILLSDALE, NEW JERSEY TEL WESTWOOD 5-2636

Circle 106 on Reader Service Card FLOW

#### To Buy or Not to Buy?

Should you purchase new equipment? The Van D. Mark "Appraisor" can tell you. The 6"



round vinyl plastic scale utilizes a tested formula to balance the purchase price of the equipment against a unit cost saving and arrive at a minimum monthly usage figure which shows whether the equipment purchase is worthwhile. It can also be used by designers of equipment for comparative evaluations.

Circle 215 on Reader Service Card

#### Magazine-Loading Parts Feeder

Induction heaters can be fed automatically by the new Special Model 2500 Feedall. According to the manufacturer, Feedall, Inc., this unit feeds 2" x 3½" slugs into a heat-treating machine at



predetermined speed and is provided with automatic shut-off controls. The large hopper provides 9 cubic feet of storage. Angle of elevation, depth of cleats, and machine speed can be adjusted to feed rolling or sliding parts into a broad range of high-speed pro-

Circle No. 165 on Reader Service Card for more information

# A Guide to

LOWER PACKING COSTS BETTER BAG CLOSURES

IF you're interested in bringing packing costs down, here is the way to do it. Take advantage of Union Special's wide knowledge of bag closing and its problems. By selecting your equipment from Union Special's complete line you get

the correct equipment for your particular job

—equipment that will do it better, faster and cheaper, giving you a stronger closure at lower cost. Whether your production schedule calls for closing just a few bags or for high continuous output, Union Special can supply the equipment to do the work efficiently, economically, dependably! For detailed information, ask for a copy of Bulletin 200. See our nearest representative or write today. INION

sentative or write today. UNION SPECIAL MACHINE COMPANY, 415 N. Franklin St., Chicago 10, Ill.

Union Soccial

Union Special

### BAG CLOSING MACHINES

NATIONAL'S
new line of improved counting scales



Rental Counting Scales Available for Inventories. Allow us to submit our bid. Write for catalog describing full line of Counting Scales.

### NATIONAL SCALE CO., Dept. C1, SPRINGFIELD, MASS.

Circle No. 114 on Reader Service Card for more information

# OLIVER Farquhar CONVEYORS

#### ...do it <u>faster</u> for less cost

▼ for package handling



This Farquhar Power Belt Conveyor line increased loading capacity and reduced work force needed to move bags from bag filler into trucks.



In-plant handling of 4000-pound parts is simplified and speeded in this industrial plant by using Farquhar Gravity Conveyors.

#### ▼ for <u>bulk</u> handling



Sturdy, trouble-free Farquhar Conveyors provide ample capacity for handling tons of bulk materials.

For more information on all types of money-saving Farquhar Conveyors

	B. FARQUHAR DIVISION
	Oliver Corporation veyor Dept. N-07, York, Penna.
	tory Branch: 618 W. Elm St., Chicago, III.
	ase send me information on
	"How to plan your own conveying system" (Bul. 500)
	Ve-Be-Veyor law-cost aluminum conveyor
	(Bul. 600)
	Roll-Free Gravity Conveyor (Bul. 801) Farguhar Bulk Handling Conveyors
Nan	
Com	pany Name
Add	ress

#### NEW EQUIPMENT SECTION

duction machines. Feeder is self-contained, powered by  $\frac{1}{2}$  hp, 3-phase,  $\frac{220}{440}$  volt motor, and has a  $\frac{423}{6}$ " loading height. Work range includes rolling parts up to 5" in diameter,  $\frac{11}{2}$ " long, or sliding parts 2" in diameter, 6" long.

Circle 216 on Reader Service Card

#### Automatic Unloader For Plating Machines

An automatic unloader for plated parts has been designed by Wagner Bros. Inc., for use with an automated plating machine. This unit, which actually performs work normally requiring 2 men,



grasps and removes a rack-load of parts as they come from the plater's drying station, tilts the load forward to deposit plated parts onto a moving conveyor belt. The rack is then returned to the machine for its trip to the loading station via the stripping and rinse baths. The unit can be synchronized with any preset cycle of the automatic plater. As a package unit, it can be adapted to most automatic plating equipment now in use, say company engineers.

Circle 217 on Reader Service Card

#### Storage Bin With 4-Way Entrance

Designed for use with hand or power lift truck or fork truck, an all-steel storage bin produced by the Palmer-Shile Company can be entered from four sides. Result, according to the manufacturer, is easier tiering with maximum use



Costs cut
with ERCO
STAK-PA

#### system of Material Handling

STAK-PAL tubular stacking racks have been designed to handle quickly and efficiently

your every storage need.
Stacking operations are safer, easier and trouble-free with removable corner posts or end frames.

QUANTITY PRODUCTION, STANDARD SIZES and our own SEAMLESS TUBE MILL assure you of a low cost product, combined with quality workmanship. All STAK-PAL tubing, square or rectangular has a minimum 11 gauge wall for rugged strength and almost complete elimination of maintenance costs. Specials made to specifications.

LET US PROVE THESE FACTS

Write for catalog giving complete information.



STAK-PAL
Three styles Type A
with one center support
in the basic for twoway entry. Type B two
angle supports. Type C
designed with six en
gle center supports, both
of latter are four way
entry.

STAK-BOX
Type X box and Type
H bin box racks are for
use with forks at least
as long as the over all
width of the racks and
have angle supports
similar to type 8 standard STAK-PAI. racks.
COIL RACK
With the SK type coil

With the SK type coi rack considerable time is saved in handling and stacking.

END FRAME RACK
Type F Stak-Pal with
removable end or side
frames are desirable
for handling of part
shorter than the space
between the corner
posts or for any parts
requiring support be-



Circle 141 on Reader Service Card

180

of available floor space. Crane lugs may be added for use with

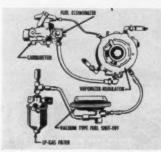


overhead hoist. Inside length and width are 36", depth 24". It weighs 210 pounds, is made of heavy steel plate, angle iron reinforcements for legs and corners. Clearance for lift truck produced as desired.

Circle 218 on Reader Service Card

#### L-P. Gas Carburetor Kit

Four principal units comprise the LP gas carburetor kit for fork trucks, supplied by the Ensign Carburetor Company: (1) The vaporizer-regulator which vaporizes fuel; (2) A fully balanced LP gas carburetor, which incorporates a patented easy starting



device and a calibrated economizer effective during practically all working loads; (3) An extralarge LP gas liquid filter; and (4) A vacuum shut-off valve, which may be used in place of the electrically interlocked solenoid type valve and associated pressure switch commonly used on LP gas installations. These four components are said to be designed with extra built-in capacity so that maximum operating requirements of the truck can be handled with ample reserve. All units are Underwriter approved. Circle 219 on Reader Service Card

Circle No. 94 on Reader Service Card for more information and the second of the second o

### A modern truck for modern plants The Hydro Lectric

with most modern features

- 2 Drive Wheels instead of one
- 2 Braking Systems available instead of one
- 4 Wheel Stability instead of three
- Alloy Gear Transmission instead of chains
- 100% more Steering Ease -Greater Maneuverability
- 50% less Maintenance -Easy Accessibility
- Finger-Tip Control -Greater Safety



Write for Bulletin KW

STUEBING Designed . Engineered . Built

TRUCKS, INC. / CINCINNATI 14, OHIO



THERE IS A TRUCK FOR EYERY PURPOSE TO HANDLE ANY KIND OF MATERIAL.

STOP . . .

# TAPING BOTTLENECKS the IDEAL WAY

with the IDEAL 200E

Electric LUP-A-TAPE

ELIMINATE TRAFFIC JAMS. The new electric CLIP-A-TAPE delivers gummed tape fast (immediate reponse from touch-of-the-fingertip keyboard) and accurate (from 3" to 105") - to allow two operators to work side by side without conflict.

**ELIMINATE TAPE WASTE.** Get only the exact tape length you want, completely moistened with thermostatically controlled heated water.



FREE Illustrated Brochure

NCIL MACHINE CO. 104 IOWA AVE., BELLEVILLE, ILL.

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NO maintenance





Lightweight . . efficient

# easiest to push and steer!

- Cut handling costs
- Mon-toxic, odorless aluminum
- ✓ No painting or special finish required
- Entire truck is maintenance-free
- Easy-swivel, free-rolling casters
- Mariable in many styles and sizes

For full details use the coupon below.

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City-Zone-State.

NEW EQUIPMENT SECTION

#### Sealed Caster Holds Grease, Stays Clean

A completely and permanently sealed caster is offered by Albion Industries, Inc. It is available in



practically any wheel size or type -semi- or drop forged steel, Moldon rubber, Rolite, Noflex. molded Textite. It incorporates precision-molded Synthi-Rubber seals on the axle ends, fitted between smooth steel washers and held in position by outer thrust washers. Wheel bearings receive lubrication through hollow axle, and seals prevent lubricant from escaping. Synthi-Rubber load seal is fitted around the load raceway to form complete seal for the load race. Raceway cannot be overlubricated, and seal cannot be blown out with high pressure gun. Caster is furnished in a cadmiumplated finish. Accessories such as wheel brake and swivel lock are available. Special sizes and types can be furnished.

Circle 220 on Reader Service Card

# Bridge Ramp Has 22,000 Pound Capacity

To meet the demand of larger capacity lift trucks, the Roll Rite Corporation has engineered an extra heavy duty bridge ramp with a 22,000 pound axle load capacity. This ramp is 9' at car door, 13' at dock; length is 5'. Made of safety tread steel p'ate with non-skid surface; has tensionized, rolled crown which adjusts for car and dock height differential. Box type underframe of



WELD-BILT
HYDRAULIC LIFT TRUCKS
Wide, narrow widths, in capacities
2500 to
10,000
lbs.

"PAL-BOY"
PALLET TYPE
ONE-STROKE
MECHANICAL LIFT TRUCKS
For loads up to 2000 lbs.

WELD-BILT
HYDRAULIC
PALLET-TYPE TRUCKS
2000 to 6000 lbs, cap.



HYDRAULIC LIFT TABLES
Heavy-duty type, lifts from 2 to 10 tons.

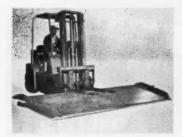


WELD-BILT
STEEL BELT CONVEYOR
Horizontal or inclined styles, in sizes from 12" to 60" widths.

WEST BEND EQUIPMENT CORP.

335 WEST WATER STREET . WEST BEND. WIS

Circle No. 173 on Reader Service Card FLOW



structural channels. Using dual lifting stirrups, one man and fork truck can lift, transport and position ramp into place. A ratchet locking device keeps ramp securely locked during operation.

Circle 221 on Reader Service Card

#### Preset Counters For Remote Control

To preset selected numbers for control of operations from a remote location, Computer Measure-



ments Corporation has developed the Model 101AR Remote Preset Decade Counting Unit, Control of this unit is through a 5-wire cable plugged to a switch which selects any digit from 0 to 9. Actuating voltage can be from 6 to 24 DC. It is designed to provide an output pulse at a selected number of rates in excess of 40,000 counts per second; if reset is not required, a 100.000 cps rate can be reached. These units are readily connected in cascade in order to emit a pulse at any desired count. Typical applications: batching, sorting, packaging, automatic counting and controlling, frequency division, generation or precise delays. Model 101AR is of the coincident type with an 11 pin base, pulse output at 0 reset. Another model (101BR) offers a 9



An unretouched photograph showing Laminated NOTAT TIRES performing under adverse conditions over aluminum clippings.

Now there are THREE kinds of tires . . . pneumatics, solids and Notats (Notats are neither solid nor pneumatic—they're LAMINATED!) This means that Notats can't go flat like pneumatics (there's no air chamber). And — unlike solid tires — Notats will "give" to prevent jarring of loads and damage to equipment. At in-plant speeds, Notats ride and steer like pneumatic tires.

of stp. . give laster steering, better stopping.

For longer tire life, easier steering, better traction and no tire trouble, switch to NOTATS. In sizes from 4.00 x 8 to 9.00 x 24. Write for price list and catalog.

Notat's molded-together pads grip instead of slip . . . give faster starting, faster

THE ORIGINAL LAMINATED TIRE
- ACCEPT NO SUBSTITUTES



NOTAT
TIRE COMPANY
1504 EAST 3416 STREET
CHATTANOOGA, TENNESSEE

# NO FLATS With NOTATS

The Plant Engineer of General Smelting Company (Philadelphia) reports: "Flats in pneumatic tires cost us too much down-time loss. We tried solid tires, but they were too hard on the men and equipment. Then we heard about Notats and tried them. They've solved our problem . . . no flats, no down-time due to tire trouble, yet they ride and grip like pneumatics".



# ALGAS

gives you ALL!

CARBURETION EQUIPMENT for any installation

- A Complete Line of Equipment
- Includes All The Important Features
- Proven Record of Trouble-Free Performance
- Easy To Install,
   Economical To Use
- Write today for complete information





Dealers Wanted

AMERICAN LIQUID GAS CORPORATION
1109 Santa Fe Avenue Los Angelos 21, Calif.

Circle 194 on Reader Service Card

### CAPCO DOCK COVERS

GIVE YEAR 'ROUND PROTECTION

CAPCO Dack Covers completely enclase the space between air and building doorways protecting loading and unloading during bad weather preventing accidents, insuring against loss of heat or retrigeration. 51 different models in any size for every loading problem.

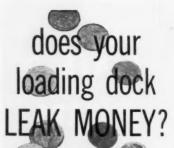


Write for literature and name of nearest distributor.

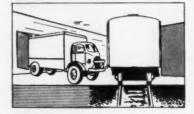


622-24 PROSPECT AVENUE . MANSAS CITY 24, MISSOURI

8739 Tonnelle Ave., North Bergen, N. J. Circle 136 on Reader Service Card



PROTECTED BY A
DAZZO LOADING
DOCK-DOOR SHELTER!



#### HERE'S WHY-

A Dazzo retractable loading dockdoor shelter provides a safe, dry, draft-free passageway between the door of your building and the door of the freight car or truck.

This saves you important money these four ways:

- 1 It prevents spoilage and damage.
- 2 It cuts heating cost and improves working conditions by sealing off drafts,
- 3 It lowers compensation insurance rates by preventing slipping and accidents.
- 4 It saves man hours by speeding loading regardless of weather and by cutting absenteeism.

#### CONSIDER THESE FACTS!

Dazzo shelter anchors permanently on the building wall around the door. It retracts or extends in 10 seconds. No tugging, no springs; it works by gravity. Eight different models, custom tailored to fit every need.

Welcome to the 1957 National Industrial Packaging & Handling Exposition. Add to your store of information about Modern Industrial Handling Systems by sending for your copy of "Loading Dock Shelters". There's a model to suit your loading requirements, No obligation, of course.

# DAZZO PRODUCTS, INC.

Dept. FL, 152 Bleecker St., N.Y. 12 Telephone: ORegon 3-5298 Circle 40 on Reader Service Card

#### NEW EQUIPMENT SECTION

reset. Model 101CR is also a coincident type with 11 pin base, plus 4-pin plug, 4 line 1-2-3-4 coded output, 0 reset.

Circle 222 on Reader Service Card

#### Small Indoor Crane For Maintenance Operations

The Mighty Midget, Model I-18, was developed by P. A. Radocy & Sons, Inc., as a small indoor



crane especially applicable to maintenance operations. The Midget requires only one operator and has a lifting capacity of 2000 pounds. Its boom rotates 360 degrees, has a reach of 18 feet, and is raised by a manually operated pump. It is mounted on a Kalamazoo speed truck, with outriggers to maintain balance under heavy lifting conditions. Small and compact, the Midget can work in close quarters and can be moved from floor to floor on a freight elevator.

Circle 223 on Reader Service Card

#### Fork Truck Designed For Easy Maintenance

The Raymond Corporation announces engineering improvements in their rider-type, low lift pallet truck with 4000 pound capacity. The changes incorporated in this unit include redesigned reach rods beneath the elevating forks, specially tapered fork tip for easy pallet entry, and additional grease fittings for fast and easy maintenance of all lever assemblies. The



# WHIPPET MARKER®!

Industrial's WHIPPET Marker is the answer to fast, economical inplant imprinting of bags, cartons, boxes, rolls, cans and the like. Friction motivated, it takes speed from and is controlled by your conveyor line operation. You mark containers as you use them, during production runs. Self inking, and using easily interchanged rubber type, the WHIPPET is solidly built to give years of trouble-free service. Easily installed out of the way on your present production line, it will quickly repay its original cost in extra savings and performance.

Write for complete details and new catalog today Dept. F.M.

other INDUSTRIAL units include:



imprinting cartons and multiwall bags at production speeds up to 3,000 per hour.





#### RAINBOW Frans-leaf Coder® — for automat-

ically marking any material

that takes hot dye transfer impressions.

SPECIALS — Our Specialty. We make and supply all types of special marking equipment, custom designed and built for your individual needs.



INDUSTRIAL MARKING EQUIPMENT 454 BALTIC STREET company, inc. 0000KLYN 17, U.Y. MAIN 4-2601

Circle 78 on Reader Service Card

earlier model's features—which allow the truck to right-angle stack 48" pallets from a 6' wide aisle—have been retained. The truck has 3 travel speeds in forward and reverse with a maximum of  $4\frac{1}{2}$  mph.

Circle 224 on Reader Service Card

#### Hydraulic Boom Reaches Out-of-the-way Places



A hydraulic boom, capable of positioning loads within .01" of

desired location vertically, longitudinally, or crosswise, have been developed by Vanguard Engineering Co. Called the Hydro-Boom, it reaches up to 48" beyond front end of the truck, and is hydraulically extended or retracted. Crosswise movement is directed by a hand-operated screw in a swivel block. Capacity ranges from 1500 pounds at maximum boom extension to 2500 pounds at minimum. Reach out action permits truck to set back from hazardous operations. Battery-powered or hand-operated models are avail-

Circle 225 on Reader Service Card

#### No Modifications Needed

A portable truck winch operating off the power of the truck's storage battery without alteration to the truck's electrical system has been developed by the Hoist Division of Burtchaell Heating Co. It has a 1,000-pound capacity and can be operated by one man at a rate of 5' per minute. Adapt-



# end congestion... speed loading!

- Light enough for one man to position
- In seconds a Magcoa Dockboard is in place . . . ready to use
- Quickly locks into place—no slippage, no shifting
- Portable, easy to re-locate
- Non-slip tread allows safe, full-speed loading
- Lightest weight—yet durable and strong
- Fingineered to your dock requirements

For full details use the coupon below.

# MAGNESIUM COMPANY OF AMERICA Materials Handling Div. mag@@a East Chicago I, Indiana Representatives in principal cities Please send special Dockboard Facts File Name and Title Company Address City-Zone-State

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#### NEW EQUIPMENT SECTION



able to many uses, this unit has a shipping weight of only 106 pounds.

Circle 226 on Reader Service Card

For more information on advertised items and new equipment, use the handy reader service card on pages 35 and 36.

7

OMAQI



#### LOW COST-LARGE PERFORMANCE

An extra bonus piece of equipment—this new Ruger Floor Crane converts easily to a truck crane. Other models are available in capacities to three tons in floor cranes, two tons in truck cranes.

WRITE:

Ruger Cranes -- 601 West Fourth Street, Uhrichsville, Ohio. Circle 144 on Reader Service Card for more information 186



Frankly, we don't know.

The customer didn't tell us. But he wanted 1,000, and we made them at an amazingly low cost. Special sizes and shapes of shop boxes are economically produced by our "Chem-Board" process of rigidizing hi-test corrugated board to remarkable strength.

We make many standard size tote boxes . . . nesting, stacking and vertical sided . . . but we'll custom-make any box your product or use calls for.

More and more famous name industries are using Convoy Tote Boxes. Try us.

#### CONVOY, INC.

P. O. Station B, Box 216-F

Circle 36 on Reader Service Card for more information FLOW



# 'Moving around with Mr. Stacatruc'

O.K. driver, you won't be kept waiting . . . there's a Stacatruc loading you

It's a good job there is—getting away quickly is important on my job.

Yes, these Stacatrucs certainly help to get you moving.

Thank goodness a lot of firms are getting wise to Stacatruc

handling-it makes all the difference.

#### STACATEUC

BRITAIN'S BEST MOBILE MATERIALS HANDLING SYSTEM



Circle No. 75 on Reader Service Card for more information

# Low Cost Way to Dump and Store



# New Model FIA Pallet Type Phil-Dump

With the use of a lift-truck, a large variety of bulk materials are easily loaded and dumped or stacked and stored with this new labor-saving Phil-Dump. Redesigned to avoid spillage, this money-saving device boasts the sturdy construction for great durability for which all Phillips equipment is famous. Features are a non-slip pallet slot and a patented safety lock which permits automatic but not accidental dumping. Capacity is 1 cu yd. Send order to Salem-Brosius.

# SALEM-BROSIUS, INC.

13 Arch Street . Carnegie, Pa.

PHILLIPS MATERIALS-HANDLING EQUIPMENT

Manufacturers Since 1863

#### NEW EQUIPMENT SECTION

#### Conveyor Carries Loads At Angles Up To 90°

A magnetic belt conveyor which transports ferrous loads at angles up to 90° has been introduced by The Alvey-Ferguson Company. Loads are carried on a thin, rough-surface belt which slides over a metal bed containing permanent magnets. The like poles of all magnets are connected with metal strips. The magnetic attraction of these continuous metal



strips holds the load securely on the belt. Because the belt must be slack to conform to the lower vertical curve, Alvey-Ferguson has engineered a special, positive-acting drive consisting of a right angle gearhead motor with a roller chain drive to the conveyor head-shaft.

Circle 227 on Reader Service Card

#### Positioner Holds Bucket At Digging Angle

Automatic bucket positioners for the No. 955 and No. 933 Traxcavators have been announced by Caterpillar Tractor Company. The bucket positioning feature, long a standard on the Cat No. 977 Traxcavator, automatically moves the bucket tilt control lever from



the tilt-back position to the hold position when the bucket reaches a preset digging angle. The adjustable linkage provided with the bucket positioner allows the bucket to be positioned at any point between an approximate five-degree digging angle and a three-degree tilt-back angle. Field changeover kits are available.

Circle 228 on Reader Service Card

# **Conveyor Gate Operates**With Little Effort

An entirely new conveyor hinge section which operates with only 10 lbs. of lifting effort has been perfected by The Rapids-Standard Company, Inc. The hinge section offers a particular advantage to the man who must operate a conveyor gate while carrying a load or pushing a loaded hand truck. It incorporates

a coil spring counterbalance which greatly reduces the amount of lifting effort ordinarily required to raise a conveyor gate. The hinge section requires 21" minimum clearance from floor to bottom of conveyor.

Circle 229 on Reader Service Card

#### Stapler Is Foot, Knee or Hand Operated



An air-powered stapling machine just introduced by The Staplex Company is equipped with a 3-way switch valve for either foot, knee or hand operation. The unit is designed for fast, low cost stapling. It can

perform a variety of industry fastening jobs, wherever pneumatic lines are available. Known as Model SA-100, it is said to be easy loading, using standard 1/4 inch leg staples. There is nothing to remove for reloading; simply slip staples into the front of the machine. The unit is portable, weighing but seven pounds.

Circle 230 on Reader Service Card

#### LPG Tank Mounting Brackets



The Circle Gas and Manufacturing Co. has announced an addition to their line-LPG tank mounting brackets for material handling equipment. These brackets are adaptable to all equipment that has room to install an Truck and Caster Com-

pany. The pneumatic tires provide the shock absorbing qualities I.C.C. tank and fit all such tanks, from 20, 33½ to 43½ pounds. They can be used for vertical or horizontal mounting with positive locking that holds tank in proper position to assure safety valve releasing in vertical position. Simple, quick-action handle permits cylinder changes in a matter of seconds.

Circle 231 on Reader Service Card

#### Handles and Spots Freight Cars



A two section Car Puller, designed for the handling and spotting of all types of freight cars on railway spurs and sidings, has been developed by The J. B. Ehrsam & Sons Mfg.

Co. Mounted on a rigid non-deflecting, semi-steel base, the unit will be shipped in two sections. One section will contain the pulling drum, complete with throwout jaw clutch, bearings and gear. The other will be

# Automatic **CONVEYOR LUBRICATORS**



#### 700 series

- I. Lubricant Reservoir
- Air Control Panel—can be remotely located— includes filter—regulator—lubricator unit.
- 3. Frame: Supports lubricat-ing mechanisms simple adjustments for quick and correct location of pumping units.
- Cam: Locates nozzle in correct pick-up position, provides means for lock-ing in non-operating posi-tion.
- Booster Air Cylinder oper-ates high pressure lubri-cant piston.
- 6. Nozzle-Pick-up Assembly

#### model 112X

- 1. Two gallon reservoir. 2. Crown Regulator & Lubricator.
- 3. Tripping Arm triggered by trolley wheel, is fed into air stream, drop-by-drop to form a fog (no dripping).
- 4. Steel Manifold.
- 5. Spray Nozzles lubricate wheel bearings.



#### model 115X



A continuous spray lubricator for chains only-air passes through a solenoid valve into the lubricator chamber, valve is wired on the inlet to the starting switch-therefore continuously lubricates as long as chain is in motion

#### model 114X

Automatically lubricates, single or double chains of slat-type conveyors. Air enters reservoir through a regulator—valve opens by cam action—the tripping mechanism is actuated by wheels or link pins passing the lubricator.

ADVANTAGES

Reduces power consumption. Saves Lubricant. Reduces conveyor repairs. Saves down-time & labor.



Send for eight-page catalog No. CL956 which describes and includes engineering data on six different models.

# CO.,

45 W. HANCOCK

DETROIT I, MICH.

Circle 198 on Reader Service Card for more information

# LOW FIRST COST LOW OPERATING COST LOW MAINTENANCE COST



Here's the lowest priced, riding material handling truck you can buy for horizontal movement of materials. Handles a full 3000 lb. pallet yet it often operates a full 8 hour day on ONE (1) gallon of gasoline. Heavy duty air cooled engine with rewind starter mounted on Truck-Man's exclusive power turret means little or no maintenance. Available for LP Gas operation. 360° steering and 27" truck width lets the DFP wind through narrow aisles and around sharp corners like a snake. Two fork sizes handle pallets from 30" to 48". Power lift gives 4" of lift—just flip the lever and take off—Truck-Man has ample power to handle up to 10% grades with load. Handy rewind starter makes starting easy. Dual pneumatic drive wheels and rubber insert load wheels protect your floors and cushion operator.

Used for years by hundreds of economy minded companies throughout the country. (One company has 34 units.) Hustles 3000 lb. loads the clock around—an efficient feeder to heavy, more costly high lift units. A Truck-Man DFP and W-40 high lift combined will do the work of TWO fork trucks at only three-fifths the cost. Ask for bulletin B-1009.



8 other economy models, both low lift and high lift fork trucks
• Y-60 shown left handles a full 3 tons over rough, unpaved yards • Ample power, traction and stability to bull through the mud and over humps • Order with Multi-Lift mast to go through your lowest door yet stack one lift higher • Other special attachments to fit your needs. Ask for descriptive literature and the name of Truck-Man dealer nearest you.

DIV. OF THE KNICKERBOCKER CO. 582 LIBERTY ST., JACKSON, MICHIGAN

Circle 163 on Reader Service Card for more information 190

#### NEW EQUIPMENT SECTION

the drive unit, consisting of motor, torque converter, worm gear reducer and pinion gear. The machine is completely assembled, with all necessary alignments made at the Ehrsam factory. Only a few bolts, joining the two sections are required for installation.

Circle 232 on Reader Service Card

#### Conveyor Can Be Moved By One Man

The Belt Corporation has added a new conveyor to its line of products for handling stampings, forgings, castings and small parts. Identified as Series P Versa-Veyor, the unit comes with a variety of standard belt widths—8, 12 and 16



inches—with special widths available on request. This light-weight, rugged conveyor can be moved easily by one man. It provides a constant, uniform flow of parts in process and assures efficient handling of parts or scrap. The belt is four-ply, inner-bound white, solid woven cotton with 1 1/2-inch high steel cleats on 24-inch centers.

Circle 233 on Reader Service Card

# Table Transfer Stand Permits Easy Routing

The M-H Standard Corporation has developed a ball table transfer stand called "Traffic Circle". It is used as a junction for 2, 3 or 4 gravity conveyor lines and permits easy routing of objects from any one line to any of the others. It is also useful where it is desired to cover a broad area by shifting a gravity conveyor. In



such a case, the Traffic Circle acts as a variable angle gravity curve.

Circle 234 on Reader Service Card

#### Floor Machine Provides High Gloss

A technique for fast, extra-high gloss polishing of floors has been developed by the G. H. Tennant Company. It involves use of a 21" pile fiber polishing cylinder on the company's vacuum equipped floor machine (Model E). The fast revolving cylinder is thickly cushioned and reportedly allows unusual speed in

1

polishing floors. It is said to be more effective than standard polishing brushes and eliminates usual rings



and circular swirl marks. It leaves a uniform wall to wall sheen and is specially recommended for lightly soiled corridor, office and classroom floors-wherever a very high gloss is required.

Circle 235 on Reader Service Card

#### Storage Rack Adjusts Without Bolts



A storage rack which is completely adjustable without bolting or unbolting is available from American Metal Products Company. The method used for adjusting is best described by its name, "Slide-N-Lock". The stringers are quickly moved up or down a special formed post and lock themselves in place. The most out-

standing feature is that over 800 different sizes and capacity variations are available.

Circle 236 on Reader Service Card

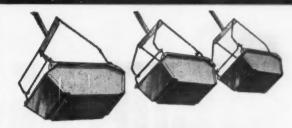
#### One Man Barrel-Lift Does Five Jobs



One operator can raise, transport, rotate, tilt and drain 55 gal. steel drums with a safety Barrel-Lift developed by Morse Manufacturing Company, Inc. All operations are performed with no undue strain on the

operator. The drum is under perfect control at all times. Self-locking feature prevents accidental movement of the handle.

Circle 237 on Reader Service Card NOVEMBER, 1957



# NOW. NESTIER



BRINGS YOU small parts handling efficiency AT NEW LOW

COST



Here's a new addition to the NesTier line . . . to give you new savings in handling small and medium parts. Completely redesigned, "General Purpose" materials handling boxes and baskets are priced one-third lower than other NesTier containers, yet incorporate all of the exclusive cost-cutting features that have been proven throughout industry,

Nesting-stacking feature . . . double hopper ends . . . twin movable handles combine to produce a standard container for use throughout the plant. Five sizes are available in both boxes and baskets.

Write today for literature.

C-989-DN



The Chas. Wm. Doepke Mfg. Co., Inc. 8836 BLUE ASH RD . ROSSMOYNE, OHIO

Circle 45 on Reader Service Card for more information



# ...engineering gives you fast, profitable control of material movement

Material lifting-and-lowering problems seldom have "standard" answers! Chances are special equipment is required, and you need specialized engineering help. Joyce is the answer! Efficient, economical Joyce solutions speed production... expedite shipping and receiving... solve factory truck lift maintenance problems... contribute to operational techniques.

Joyce will meet your most rigid requirements, beginning with problem analysis and estimate, through design and manufacture, to final installation at your plant. You get a guaranteed, precision-built product, incorporating the most modern improvements in hydraulic equipment.

VARI-RAMPS ● PLATFORM LIFTS ● SKID INVERTERS ● LIFT-A-TRUCK
RAMPS ● FEED TABLES ● CROSS-OVER BRIDGES ● FACTORY TRUCK
MAINTENANCE LIFTS ● HIGH CAPACITY AIRCRAFT LIFTING DEVICES
ENTERTAINMENT STAGES

A TRAINED JOYCE REPRESENTATIVE WANTS TO HELP YOU WITH YOUR MATERIAL HANDLING PROBLEMS...

Call or write the Joyce-Cridland Co.

today for nearest representative!

#### THE JOYCE-CRIDLAND COMPANY



U.S.A.: 2027 E. FIRST ST., DAYTON 3, OHIO

Designers and builders of lifting equipment since 1873

CANADA: MIDLAND FOUNDRY & MACHINE CO., LTD., MIDLAND, ONT.
Circle 178 on Reader Service Card for more information
192

#### NEW EQUIPMENT SECTION

#### Bottom Stapler Is Foot-Operated

A stapling machine designed for bottom-stapling of cartons before they are filled has been introduced by International Staple & Machine Co. The machine is called the International Bottom Boxer. Its easy foot operation allows full use of both hands throughout the entire stapling operation. Height of the pedal is



adjustable for operator convenience. The unit has an extra large magazine that will hold 200 staples, either 1/2, 5/8 or 3/4 in. Throat depth of 27 inches and width of 14 inches permit bottom stapling of a wide variety of carton sizes and shapes.

Circle 254 on Reader Service Card

#### Biggest Vacuum Bottle of Them All

A tank trailer designed by Lox Equipment Co. has a tanker unit that is actually a



tank within a tank, with a vacuum in between. The special trailer is designed to transport liquid oxygen, but can be converted easily to carry other liquid gases.

Circle 255 on Reader Service Card

#### Vibration Tester For Packages

Designed to pretest possible shipping damage to lightweight or fragile articles shipped by Parcel Post and Express, the new Model 50-V "Parcel-Prover" vibration tester is available from Gaynes Engineering Co, In



this unit I" thick hardwood table is activated by ground steel eccentrics on front and rear drive shafts; this action simulates actual travel conditions, thus discovering weaknesses in packaging of chinaware, glassware, ceramics, lamps, small appliances, giftwares, toys, etc. Both table and front and rear drive shafts are mounted on ball-bearing, self-aligning pillow blocks. A Vari-Speed drive assembly transmits power directly from ½ hp motor to rear drive shaft. Simple hand wheel permits easy and accurate control of vibration frequency.

Circle 256 on Reader Service Card



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All of the companies above are maintaining their reputations for progress, and progress means LPG. Fork trucks fitted with LPG systems have saved their owners as much as \$1,000 a year in fuel, oil, labor and maintenance costs alone-sure proof of a progressive new development that pays off. We'd like to suggest that you ask these companies about LPG when you buy, and we offer a complete line of conversion equipment for up-dating your present equipment. For full information, write us today.

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MARVEL-SCHEBLER PRODUCTS BORG WARNER CORPORATION . DECATUR, ILLINOIS

Circle No. 103 on Reader Service Card for more information

NOVEMBER, 1957



PROBLEM: Ground-level loading, Vibradamp Corp., Jackson, Michigan. Two three-man teams and two power trucks were required for loading truck cargos and rail car shipments. As a result, loading costs were too high... freight movement lagged, and the men worked under hazardous conditions—manually handling huge drums of the company's asphaltic and resinous products.

SOLUTION: Now, with a Magliner Mobile Loading Ramp on the job, railcar and truck loading both are easily handled by one man and power truck, in less than half the time formerly required! And the Magliner paid for itself in only six weeks! Four men were released to other departments . . . over-all handling costs reduced. Do you have an older building or ground-level plant . . . need extra or movable dock facilities? A Magliner Mobile Loading Ramp is the practical money-saving solution. A loading dock on wheels, where you need it . . . when you need it!

Write for Job Roport LR-362 and Bulletin DB-211

MAGLINE INC., P.O. BOX 1211 Pinconning, Michigan

**Mobile Loading Ramps** 

Canadian Factory: Magline of Canada Ltd., Renfrew, Ontario



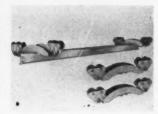
• Used where two sections of power, belt, live roller or chain conveyor converge, the Ultimate Traffic Cop permits one case, can, carton or box to pass on one line while the other line is stopped by the arm. When flow of material ceases, or sufficient gap occurs on line, material on other line passes.

other line passes.	MAIL THIS COUPON	- war
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Circle 83 on Reader Service Card for more information

#### NEW EQUIPMENT SECTION

#### Overhead Crane Package Kit



An overhead crane package kit has been introduced by the Becker Crane & Conveyor Company. The unit is sold as a low cost, "off-the-shelf" package kit which because of its broad

adaptability, can be held in stock for immediate shipment to meet emergency handling needs. The kit contains two truck frames, four crane trolleys and all necessary bolts and fittings.

Circle 243 on Reader Service Card

#### Storage Cabinet For Small Parts

A portable storage cabinet for nails, screws, bolts and other small parts has been introduced by the Arcline Products Company. It contains 13 varied sized compartments and operates on an exclusive patented prin-



cipal which permits all trays to quickly and conveniently open at one time. It stands securely on bench or table and may be hung on a wall.

Circle 244 on Reader Service Card

#### Self-contained Closed-circuit TV Camera

A "single unit" closed-circuit television camera with associated remote control accessories has been developed by General Precision Laboratory Incorporated. The camera, designated as GPL Model



PD-500, weighs 12 pounds and is completely selfcontained within the camera housing. A remote control box permitting camera operation from distances up to one mile away is available as an accessory.

Circle 245 on Reader Service Card

#### Sweeper Uses LP-Gas

An LP-Gas powered sweeper, specially designed for congested areas where exhaust fumes may be objectionable, has been developed by the G. H. Tennant Company. The unit (an LP-GAS version of the company's 28" sweeper) is designed for use in confined factory areas, bakeries, food plants and tobacco ware-

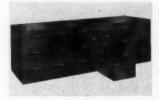
)



houses. It reportedly reduces exhaust fumes to a minimum and assures longer engine life through improved combustion. The sweeper retains automotive steering, daul front wheel drive and other features of the gasoline-powered model.

Circle 246 on Reader Service Card

# Answer to "Where To Put It" Problem



A wide variety of small items can be safely and efficiently stored in these new steel drawer case units developed by Lyon Metal Products, Inc. Each drawer has a

combination handle-lableholder for quick identification and easy access. Stops prevent accidental removal of drawers and spillage of contents. Each drawer is equipped with dividers that are instantly adjustable on one-inch centers. Units can be stacked to any desired height. They are available in 12, 18 and 24 drawer models.

Circle 247 on Reader Service Card

#### Separates Sheet Stock Automatically



Automatic separation of sheet or strip stock being fed to presses, brakes, and other tools is accomplished by permanent magnetic Sheet Fanners produced by Eriez Manufacturing Company. To provide a full line of Sheet Fan-

ners for maximum operating efficiency on materials of various weights, Models SF 10, 20, 30, and 40 have been developed (as in earlier models, each will





#### AN ECONOMY-PRICED TABLE-TOP CONVEYOR

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A smooth, dependable, quietly operating table-top conveyor with low initial and maintenance costs. Extensions can be added for over-all length of 81 feet. Available with or without side leaves... adjustable height. Rigid, enameled steel frame with durable 3-ply belt in widths from 6 to 24 inches. Choice of fixed belt speed within 3 to 100 F.P.M. range or variable speeds with 3-to-1 ratio. Moves packages and pieces at lowest cost.

WRITE FOR COMPLETE INFORMATION ON THE CONVEYORS



#### THE BELT CORPORATION

5775 Stahl Road.

Orient, Ohio

Circle No. 18 on Reader Service Card for more information 196

#### NEW EQUIPMENT SECTION

be available in 6", 9", and 12" heights). The basic characteristic of this unit-an Alnico V permanent magnetic element totally enclosed in a protecting cover-will remain the same. Placed adjacent to a stock pile of tin plate, sheet, strip, etc., the powerful magnetic field induces like polarity in the stock, causing the pieces to repel each other, thereby tending to rise in the air and maintain definite separation. As each sheet is removed, the others rise to correspondingly higher positions; faster, safer operation is secured, and accidental feeding of "doubles" is eliminated. The new SF models feature: a newly designed protective shell of riveted aluminum; wear strips of stainless steel on the face plate to minimize frictional resistance to the elevation of stock; a magnetic circuit designed to afford definite separation of stock over the entire height of the unit.

Circle 248 on Reader Service Card

#### **Automatic Tongs Lift Wheel** and Axle Assemblies

Railroad wheel and axle assemblies weighing up to 3500 pounds each are lifted quickly and easily with the help of automatic tongs. Designed and manufactured by Heppenstall Company, the tongs have a maximum

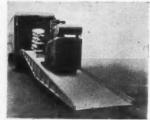


jaw opening of 9 inches for fitting around an axle. They include two pairs of jaws, 18 inches apart, controlled by a single automatic locking mechanism on the spreader bars. Suspended from a crane with a long boom mounted on a four-wheel truck, the tongs are lowered over an axle with their jaws locked open. Lowering them a few additional inches to create slack releases the automatic locking mechanism, so that when the tongs are raised again they close against the axle assembly. The tongs cannot release their load while it is in the air.

Circle 249 on Reader Service Card

#### Loading Ramps in 16 Models

A series of loading ramps in 16 standard models is now introduced by Magline Inc. The new models provide improved height adjustability, ranging from 34 to 61 inches for the 36 foot models, and 38 to 61 inches



for the 30 foot models. Tire Saver Side Curbs, designed to prevent scraping and scuffing of truck tires, have been raised to 41/2 inches for extra protection )

against truck run-offs. Two widths, 58 and 70 inches, are available. Capacities range from 7,000 to 16,000 pounds, to accomodate all normal fork truck opera-

Circle 250 on Reader Service Card

#### **Elevating Hopper Feeds Bulk**



An automatic bulk loader has been added to the line of elevating hopper feeders made by Feedall, Inc. Cycled for automatic loading of a vibratory feeder, the Model 2400 loader is entirely self-contained and is powered by a 1/2 hp motor and variable speed drive with electrical controls. Capacity of the hopper is 4 cu. ft. and pro-

vides large storage to fit production variations. Parts are picked up from the hopper by metal cleats on the moving conveyor and elevated to deliver into the vibrator feeder. It can be modified to feed rolling or sliding parts in a wide range of sizes.

Circle 251 on Reader Service Card

#### Truck Lifts To 128 Inches



A straddle type lift truck, suited for limited capacity elevators and floors, has been designed by Lift Trucks, Inc. Short turning radius allows for greater manuverability in limited areas. It is available in capacities of 2000, 3000, and 4000 pounds, and features telescopic lift to 128 inches. Two driving wheels, auto-

matic parking brake, sealed alloy gears instead of chains, and sealed ball-bearing rollers in masts are modern features.

Circle 252 on Reader Service Card

#### **Torque Converter Introduced**

The Prime-Mover Company announces a new hydraulic three-element torque converter drive transmission. The converter and directional change unit can be furnished matched to various air and liquid cooled engines. It is designed for simplified coupling to engine and final drive. Compact design of the transmission makes it particularly adaptable to small equipment in the 15 to 30 hp range.

Circle 253 on Reader Service Card



Whether your products are going to Greenland's icy mountains, to the dripping tropics, or any point between, you can't beat Green Core for specification packaging.

This barrier material is strong and so flexible and easy to use that it speeds up packaging operations. The pliable sheet easily conforms to any product shape. Green Core Super Cloth Rap, Heavyweight, is waterproofed, greaseproofed and self-sealing. Lock seam joints are as grease resistant as the material itself.

The greaseproof film is on cloth backing and the sheet is coated on both sides with compounded, microcrystalline wax. Green Core Super ClothRap, Heavyweight, is particularly recommended for Methods 1, 1A-1 and 1A-2 under MIL-P-116. Qualified Products List Numbers will be furnished upon request.

#### **MID-STATES Gummed Paper Company**

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Syracuse Cleveland Detroit Los Angeles

Circle 110 on Reader Service Card for more information



Revolutionary New
Flying Saucer
wheels!

Diagram shows how angularmounting entry wheels climb bottom board of double-face pallet...prevent "push-away" annoyance. An exclusive Barrett feature.



# BARRETT

BARRETT-CRAVENS COMPANY, 614 Dundee Road,

Northbrook, Illinois. Representatives in all principal cities.

Canadian licensee, S. A. Armstrong, Ltd., Toronto, Canada.

Circle 14 on Reader Service Card for more information 198

#### Selector Truck Has Different Uses



A new type of 4-wheel FloorMaster selector truck for use with either a tractortrailer system, in-floor dragline, or manual operation has been introduced by Lewis-Shepard Products, Inc. These trucks are adaptable to any warehousing or order-picking function, and have a

2000-2500 lb. capacity. They are equipped with 8" casters and either 10" or 12" main wheels. Other features: steel-bound hardwood decks; rounded corner pads at the rear; rounded corner bumper at the front to protect dragline mechanism and pushing handle; full-width blackboard and hinged clipboard. Nine different sizes are available, ranging from 30" x 48" to 36" x 60". On all models the end rack extends 36" above the deck.

Circle 257 on Reader Service Card

#### Storage Bin Has 3500 Cu. In. Capacity

Added to the line of bins produced by the Stackbin Corporation is a new size, the No. 6. Dimensioned at 18" wide, 30" long and 12" high, with 3500 cubic inch capacity, No. 6 is the largest Stackbin manu-





Move almost any flowable material — wet or dry — through any plane or angle . . .



Make big savings! Move bulk materials automatically—up, down, through walls, around corners and obstacles with a Hapman! Circuits like these or complex layouts engineered to your needs. Usually a single drive unit serves where other conveyors need several. Design cuts costs. Dust and liquid tight!

WRITE for Circuit Bulletin and Catalog F-117

Tapman CONVEYORS, INC.

In British Commonwealth & Europe:

MICHIGAN
Fisher and Ludlow Ltd., Birmingher

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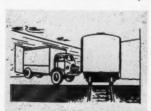


factured. Other capacities range from 45 cubic inches (No. 00, in photo) to 2800 cubic inches (No. 5). The No. 6 Stackbins stack easily and securely together without fasteners or tools.

and can be used in place of skid boxes, pallet boxes, or corrugated tubs. Likesize Stackracks are available for use with No. 6 Stackbins to form flexible storage units of any size or number. No. 6 Stackbin in Stackrack combinations can be interstacked with other size. Stackbins and Stackracks to provide maximum storage versatility.

Circle 258 on Reader Service Card

#### Dock Shelter Fits Any Size Vehicle



A retractable dock shelter made by Dazzo Products Co. automatically adjusts in 10 seconds to any size freight car or truck. It is not necessary to attach the shelter to the vehicle. There are no

springs; the unit operates by gravity to enclose completely the area from the vehicle to the loading dock. When retracted the shelter projects approximately  $8\frac{1}{2}$ 

DILLON WEIGHT INDICATOR

#### WEIGH MATERIALS ON THE SPOT!

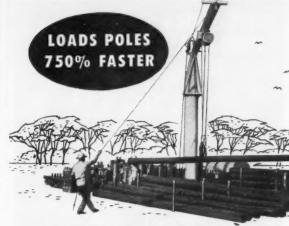
With the DILLON Weight Indicator, loads are checked on the spot as they are moved—the instant they are lifted. No need to pick materials up, move them to a scale, set them down and then pick them up again—no more double handling or high operational costs.

Accuracy is guaranteed to be within ONE division or less at any point on the dial. Adjustable for large tare loads. 16" dia. dial. Swivel hook. Accidental overload and shock protected. 6 capacities from 0-250 pounds up to 0-5,000 pounds. Portable—weather-proof—dust-priof. Each unit celibrated with certified dead weights. Extreme utility at LOW cost!

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#### W. C. DILLON & CO., INC.

14568Q Keswick St., Van Nuys 8, Calif. (Suburb of Los Angeles) Circle 44 on Reader Service Card for more information NOVEMBER, 1957 Circle 91 on Reader Service Card for more information



#### LETOURNEAU JIB CRANE CUTS UTILITY'S YARD HANDLING COSTS

LeTourneau Jib Crane at a southern utility company\* will pay for itself in less than two years, according to its president. The installation has reduced pole loading on line trucks from 15 minutes per unit to two minutes. Crane permits easy pole sorting . . . simplifies buying and eliminates need for

large stockpile. Unit also handles transformers and reels of conductor.

Full-revolving LeTourneau Jib Cranes, both manually and power-rotated, available in capacities from 3 to 15 tons. Handle rated loads anywhere on 25' boom. Can be equipped with matched LeTourneau Hoists.

Write for free descriptive literature today.

\* Name on request

#### R.G. LETOURNEAU INC

Industrial Equipment Division
26311 South MacArthur Longview, Texas

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USING THE MULTISTAMP STENCIL DUPLICATOR FOR

#### **LOT LABELLING AIR FREIGHT**

Quick! Accurate! Easy! Print shipping information direct on cartons, boxes, packages. Eliminate double operation of preparing labels and then passing them to the containers. Get 1,000 or more clear, sharp impressions from one stencil without relaking. New FORM-CUT® Stencil has facsimile of your label or shipping form die-impressed into the stencil. Then type or write in address or identification data...attach to duplicator... and print, like using a rubber stamp. Write for Literature and FREE SAMPLE FORM-CUT STENCIL AND PRINT.

THE ORIGINAL HAND STAMP STENCIL DUPLICATOR

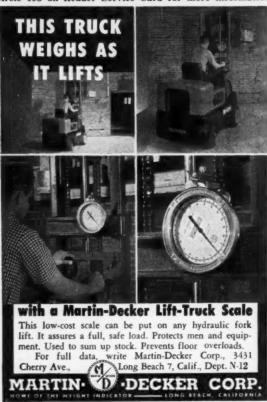


Also for addressing shipping tags and labels . . . prints postcards, menus, forms, bulletins. 8 complete outfits: \$9.50 to \$99.50, including supplies (f.o.b. factory). At office or shipping room supply dealers.



Circle 113 on Reader Service Card for more information

199





get all the facts about the casters that are engineered for modern material handling...



#### SAGINAW PRODUCTS CORPORATION

	SAGINAW 2, MICHIGAN
	PLEASE SEND ME YOUR NEV/ ENGINEERING MANUAL NO. C-56
	NAME
-	COMPANY
	ADDRESS

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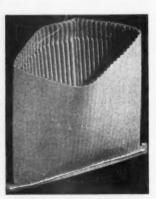
#### NEW EQUIPMENT SECTION

inches from the building wall. The fabric is made of long-lasting pliable Khaki Duck Vivatex, mildew treated and reinforced at stressed points.

Circle 259 on Reader Service Card

#### Samples Available

Lightweight, economical bags by Sherman Paper Products Corp. are made from single-wall corrugated sheet—offering resilient cushioning on the inside and tough puncture-resistance on the outside. Corro-Bags are light and compact, easy to open, and seal quickly with staples or gummed tape. Double-scored edges dissipate



end blows. The bags are shipped flat, with one end sewn closed. This sewn end is easily opened by pulling the end of the thread when the contents are to be removed. The bags are available in all standard sizes. Samples are available from the manufacturer.

Circle 260 on Reader Service Card

#### Powered Rollers For 90-Deg. Turns

A 90-degree powered roller curve, available from Sage Equipment Co., Inc., solves the problem of packages not able to negotiate a right angle turn by gravity. This unit is chain driven and manufactured with fixed or variable speeds, Rollers



are tapered; the standard roller is 30" wide and spaced on 3.1/2" centers on the inner band. Other sizes and types can be manufactured to meet requirements.

Circle 261 on Reader Service Card

#### Conveyor-Fed Oven For Automation

A conveyor-belt-fed oven which can be used with automatic loading and unloading facilities is manufactured by the Grieve-Hendry Co., Inc. Used for drying and baking processes, dehydrating



and baking-on finishes, it can be made for heating by

gas, electricity, or steam. The unit illustrated is gas fired, with 1,000,000 TU burner, maximum temperature of 450 degrees F. The 36" wide belt is driven by electric motor at adjustable speeds of 2 to 10 feet perminute. A 6' extension is at each end for loading and unloading. Oven has counter-balanced doors adjustable for opening desired. Baking chamber dimension, inside: 38" wide, 24" high, 15' long. Overall height of unit is 11' 6". Dimensions and other speci-

Circle 262 on Reader Service Card

#### **Extruded Steps For Ladder Safety**

fications can be changed to suit requirements.



A safety feature of the line of lightweight aluminum ladders manufactured by the Ballymore Company is the use of extruded aluminum steps. Solid and ribbed, they provide stable footing for any kind of shoe. The new design also promotes easier cleaning. Other features; ballbearing casters for maneuverability; rubbertipped legs to insure

four-corner support. Casters automatically retract when ladder is stepped on. Ladders, in 4 sizes and 7 models, are constructed of all-welded aluminum tubing—there are no bolts or rivets to loosen. Handrails for added safety are offered on 3 and 4 step models.

Circle 263 on Reader Service Card

#### All-Hydraulic Control for Easy Shovel Operation

Power steering and power shift are standard on the 6-yard, rubber-tired Michigan Model 375A tractor shovel manufactured by Clark Equipment Company. A



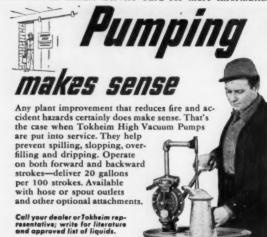
torque converter multiplies engine torque 300 per cent to meet load demands without punishing drive components. According to the manufacturer, it can heap a 14-cubic-yard haul truck in less than 2 minutes. Its 375-horsepower engine drives the 56,000-lb loader along the highway at a top speed of 30 mph.

Circle 264 on Reader Service Card

Circle 15 on Reader Service Card for more information







TOKHEIM HIGH VACUUM HAND PUMPS

#### pump many liquids

Acetates • Alcohols • Aromatic Solvents Chlorinated Solvents • Glycols • Ketones and Ethers • Petroleum Products & Solvents • Plasticizers • Water and Others.

Alternate parts for special liquids

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Cut costs—Eliminate messy, sticky, leaky, ball pots, fountain brushes and rollers.

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STENCIL INKS

Handy aerosol spray container is always ready to use. Nothing to load. No spilling. No brushes

to clean. No drying out. Covers quickly. Saves time. Very economical.

9 COLORS. For stenciling cartons, crates, boxes, steel drums, color coding metals and other materials, or any other stenciling on steel, wood, fiber, canvas, glass or other surfaces.

A trial will convince you. Write for full details!

Ask us also about Reynolds Stencil Kover, the very opaque, fast covering blockout fluid. Tan colored to match corrugated cartons. Completely blocks out old stenciling, labels, printing, crayon or painted markings, etc. Dries quickly. Permits re-marking and re-shipment in original carton, —re-stenciling of left over cartons;—or correcting stenciling errors. Packaged in a handy 12 oz. aerosol container.

REYNOLDS INK, INC.
4508 Euclid Avenue • Cleveland 3, Ohio

Circle 138 on Reader Service Card for more information 202

#### NEW EQUIPMENT SECTION

#### Jacks Work In Any Position

Precision jacking, pushing and pulling and linear actuation can be handled by the worm gear screw jacks added to the line of Joyce-Cridland Co. Unit illustrated has a 15-ton capacity and travel to suit requirements. Jack housing is 8-7/8" long, 7-1/8" wide, and 8-3/4" high; worm gear ratio is 8 to 1, with 32 revolutions



giving one inch of travel. Power source can be either manual or motor with reduced unit. This jack is designed for applications in machine adjustment, vertical adjustment of rolls or other machine members, loading platform and feed table adjustments, raising and lowering of production equipment, and stabilizing and leveling mobile units. It can be designed into equipment to provide impact resistance, maintain precise leveling, or expedite servicing and maintenance on overhead cranes and other equipment.

Circle 265 on Reader Service Card

#### Safety Rack Has Simple Fastening Device

A load safety rack with high strength and simple fastening devices has been introduced for the new Clarklift line of fork trucks by the Industrial Truck Division of Clark Equipment Company. Construction is heavy steel formed sides and tubular crossbars. Face of rack is flush with face of the forks so that there is



no loss of fork length. The rack is anchored to forks by means of captive pins which permit quick removal without use of tools. Design of rack eliminates loss of fork spread.

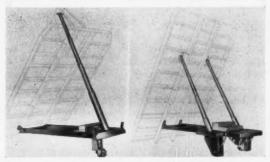
Circle 266 on Reader Service Card

#### Telescopic Hoist Adds To Payload

According to The Perfection Steel Body Company, its line of telescopic hydraulic hoists—trade name, Micro-Tel—can add as much as 1000 pounds of legal payload to trucks or trailers through savings in hoist weight alone. This forward-mounted telescopic hoist applies lifting power directly to the load and ahead of load center, resulting in less strain on the hoist and hy-

1)

draulic system. Equipped with safety features, such as automatic shut-off cable that pulls pump lever into



hold position when body reaches set dumping level while pump relief valve safeguards the hydraulic system from shock pressures. Newly developed wiper ring keeps telescoping tubes free from dirt, according to performance tests.

Circle 267 on Reader Service Card

#### Small Size, Big Capacities



A 1000-pound capacity hydraulic lift table designed to operate in space-short areas has been added to the Crown E-Z Lift line. Manufactured by Crown Controls Company, Inc., this lift, known as the L-103, hoists by means of a manually operated hydraulic pump. Load is lowered by opening a release valve. It has a

lifting height of 48", overall height of 60". Platform is 15" x 20", can be smooth or safety plate. Two 4" wheels on the front and two 4" swivel casters on clude overload bypass valve and foot-operated floor the rear provide maneuverability. Safety features in-look.

Circle 268 on Reader Service Card

#### Now You Can Nail Corrugated Material

A unique nailing clip developed by Tri-Wall Containers, Inc. makes it possible to nail triple-wall corrugated board. The clip consists essentially of a small





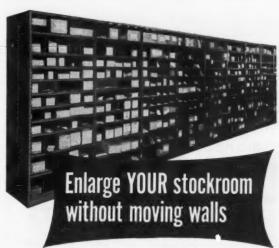
rectangle of steel, with each of its corners bent 90 degrees to form triangular prongs that bite into the surface of the material. Since corrugated offers poor

Circle 108 on Reader Service Card for more information



MERRILL BROTHERS

54-74 ARNOLD AVE., MASPETH, N. Y.



You can custom design storage facilities to suit your exact needs—with Equipto Steel Shelving Units. Eliminate "dead areas" and unnecessary bulk . . . enlarge your stocking area . . . accelerate stock handling.

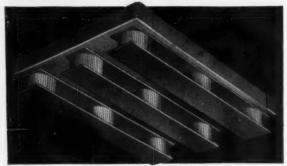
Available in all sizes, either open or closed . . . dividers, panels, label holders, bin fronts, and drawer sections may be added or rearranged at any time. For further details on shelving and other Equipto products write for free 16 page booklet No. 256, "Short Cuts to Greater Profits."



805 Prairie Avenue Aurora, Illinois

STEEL SHELVING . . . PARTS BINS LOCKERS . . . DRAWER UNITS . . . CARTS . . . WORK BENCHES.

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Bottom view of Signode expendable pallet showing patented corrugated posts.

### Weighs 10 pounds . . . supports 6000

Signode expendable pallets are low in first cost; eliminate all maintenance cost, save storage space. Low cost Cut shipping costs every mile, every load. Easy Light weight and clean to handle.

Rugged construction proved in use and in famous Strong Signode testing laboratory.

Standard or special sizes. Post placement variable. Versatile Tray or flat tops.

No returns, therefore no shipping, record-keeping Expendable or storage costs on returns

Competent Signode assistance on expendable pallet design and unitizing methods is available. For information on Signode Addison-Semmes pallets, write:

### SIGNODE STEEL STRAPPING CO.

Dept. SP, 2618 N. Western Avenue, Chicago 47, Illinois

Offices coast to coast.
Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto



Put this three-way saving to work in your own operations with ElectroLift Worm Drive Hoists. Designed in capacities up to ten tons, ElectroLift moves materials faster, more economically with less effort. Its efficient, long service saves its initial cost many times over.

Here's what make the fully-enclosed ElectroLift hoists outstanding: automatic electric brake, steel suspension, worm drive braking, grooved drum, alloy-steel worm shaft, automatic lubrication, optional controls, and many special features.

For complete details, consult your ElectroLift representative listed in the telephone directory.



ELECTROLIFT, INC., 204 Sargeant Ave., Clifton, N. J. Circle 50 on Reader Service Card for more information 204

#### NEW EQUIPMENT SECTION

nail-holding strength, the triple wall material has heretofore been limited in its applications. The new clip overcomes these problems. Fastenings cannot pull through except under extreme conditions. Each clip contains two small holes for nails and a large hole for bolts.

Circle 269 on Reader Service Card

#### Marker Adjusts Without Operator

Automatic assembly line marking of various size packages is now available without operators or line stops for size adjustment. The Ideal Mark V Volu-Marker adjusts itself for carton heights up to 21 inches, and



for lengths from 8 to 36 inches. Designed by Ideal Stencil Machine Co., it counts the number of units marked, positions each carton for marking, marks firmly without damage to contents, and can be set to shut itself off after a pre-determined number of units have been shipped. Operating speed and imprint size are also variable.

Circle 270 on Reader Service Card

#### Multi-Tray Truck Can Be Used As Table

Capable of handling 150 pounds of stock per tray, a multi-shelf truck has been developed by the Lansing Company for use as a tool table, for use by machine and lathe operators, for stock picking and semi-live storage. Named the "Nifty Toter" (No. 368), this table has a balanced arrangement of 5" solid rubber wheels and 4" swivel casters,



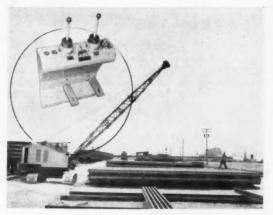
permitting women to operate it fully loaded. Truck is 42" high, 24" wide, 12" deep. Arc-welded construction of angle-iron frame with heavy gauge steel trays. Available in varouis arrangements of shelf spacing to meet special requirements.

Circle 271 on Reader Service Card

#### "Joy-Stick" Control For Crane Operation

Consolidation of the 3 or more conventional control levers to a 2-lever "Joy-Stick" has been announced by The Thew Shovel Co. for its Lorain-26 crane (and 1)

others in the Lorain series). The 2-lever arrangement controls swing, travel, hoist, crowd and retract, or



load lowering and boom derricking by hydraulic power. Improvement in control, response and speed of operation is said to be the result. When the "26" is used as a crane, it can be equipped with an internal gear boom hoist which provides a final planetary gear reduction drive to the drum to produce slower speeds and improved control, A larger boom hoist drum will accommodate heavier derricking cable as well as increase cable winding capacity.

Circle 272 on Reader Service Card

#### Vibrator Packs Boosted Power



The redesigned RC-50 Vibrator provides more power than previous units produced by The Cleveland Vibrator Co. The new model develops a maximum vibrating impact of 2250 pounds, and is used on bins, chutes and hoppers for han-

dling all types of dry and viscous bulk materials. It weighs only 84 pounds. Models are available for operation on 110 to 550 volts. The unit operates on a rotating eccentric weight principle. There are no recirprocating parts, and the only moving part is the rotor.

Circle 273 on Reader Service Card

#### Wheel Block For Light and Heavy Loads



A cast steel "Jet" Wheel Block, Model WB17, is manufactured by Calumet Steel Castings Corporation for use with stake and panel trucks, passenger vehicles, small aircraft, and for wheel-mounted drills, compressors,

generators, welding machines, pumps. Face of the

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THE
"VAC-U-LIFT"
SYSTEM
rincipal of induces

vacuum creates pesitive, safe seal on "Vac U-Fads" - Permits sac man to cantral handling al heavy, bulks materials. - Can be used with lift trucks, cranes, hoists, etc. - New handling losses up to 20,000 lbs. - up to 1000 sq. ft. in area.

ACUUM RELEASED



One man operation of handling sheet steel to shear is made possible by Vac-U-Lift and overhead hoist. Vac-U-Lifts have solved many of the most

Vac-U-Lifts have solved many of the most difficult handling problems for industry. Send us your problem for solution.



A division of Hufford Machine Works, Inc.
SALEM, ILLINOIS
Exclusive mfgrs. of Vacuum Handling Equipment



Add mobility and efficiency to your equipment ...put it on

Bond CASTERS

Today users want equipment that can be moved easily. And Bond Industrial Casters do this best because they are soundly designed, made to the highest quality standards, best of all, priced to save you money. Why be satisfied with anything less—put your equipment on Bond Casters and be sure.

Write for your copy of Bond Catalog K-40—it's sixty-eight pages of solid facts—or see your local industrial distributor now.

40-A Series Double Bali Race Structural Stee! Swivel Caster



50-A Series Pressed

FOUNDRY & MACHINE COMPANY
MANHEIM, PENNSYLVANIA

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205

Circle 43 on Reader Service Card for more information





- · Extra rugged for impacts of trucks.
- · No maintenance required.
- · Easy and economical to install.
- Capacity 20,000 pounds concentrated at any point of ramp platform.



Two models: 96A recesses within the loading dock, 96AU is self-contained and easy to move from place to place.

Write today for complete details, Dept. 5-117





Extreme DOWN

LOOMIS MACHINE COMPANY 133 East Fourth St., Clare, Mich.

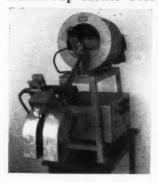
Circle 201 on Reader Service Card for more information

#### NEW EQUIPMENT SECTION

block is curved to engage tire completely. Calks provide engage.nent under light pressure on smooth concrete, and are self-sharpening under wear. They may be repair-welded and reground for repeated use. The block is an integral alloy steel casting with rounded edges and corners. Weighing 8 pounds, the metal in the casting is distributed to insure strength in strategic places.

Circle 274 on Reader Service Card

#### Bench-Top Model Offers Fast Packaging



A bench model of the Electronic Hoppermatic is now available from The U.S. Engineering Co. This model can be used to package small parts in counts from 1 to 1000, at speeds up to 200,000 per hour. It can be changed over from one size or shape to another in five or ten minutes. No part

changes are needed when changing over. The unit has





BECAUSE each low cost IMP boosts vehicle efficiency tremen D dously . . . and immediately . . . your investment in this a industrial equipment pays for itself so quickly!

Designed for triple duty as base transmitter, mobile radiotelephone, and public address system, the IMP keeps vehicles in contact with each other as well as central dispatching . . . stops empty trips and needless backtracking . . . turns every trip into a payload haul!

Ruggedly built for industrial use, the IMP measures only 12½" x 8¼" x 5¼". Installation is simple, tune-up not required, and maintenance costs low.

Call your Kaar dealer for a demonstration.





ENGINEERING CORP.

2926 Middlefield Rd., Palo Alto, California Canadian Office: 801 Dominion Bldg., Vancouver, B. C.

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In scores of industries Kalamazoo burden and personnel carriers are vital links in the materials handling system. Self-propelled, highly maneuverable and amply powered, versatile Kalamazoo machines contribute to greater overall materials handling efficiency. There is a Kalamazoo to meet your particular requirements.







MODEL 2500 SPEED TRUCK. Gaspowered platform truck. Carries loads of 2000 to 3500 pounds, depending on the type of tires with which it is equipped. You can equip it as a personnel carrier, a plant maintenance truck or in a dozen other ways. Its 15 MPH speed and 6'-9" turning radius enable it to get around a plant in a hurry.

MODEL E-1900 SPEED TRUCK.

Electric-powered platform truck. Has ample power to climb 17% grades with a 2000 pound load. High ratio of payload weight to truck weight assures maximum operating efficiency. Low bed facilitates loading and unloading. 75° turning radius means fast maneuverability in crowded areas.

XPEDITER. Simple, lightweight, low cost gas-powered "hand truck". Moves barrels, boxes, produce and L.C.L. freight fast—across light floors. Can tow loaded trailers even when carrying a load itself. Rugged, easy to handle. Nimble maneuverability saves time. Six models. Capacity 600 to 800 pounds.



Kalamages



MODEL 3600 TRACTOR. Gas-powered. Has 1200 pound drawbar pull. Easily tows twenty tons on roller bearing trailers. Its short 51½" wheelbase and 59" turning radius permit easy, time-saving maneuverability in congested areas. Model 3600 is built with an extra margin of ruggedness that insures dependable performance.

**ELECTRIC RUNABOUT.** Supervisors, maintenance men and others find this agile little intra-plant personnel carrier a real time and leg saver. Powered by 6-12 volt battery system and gearhead motor. Speeds up to 10 MPH. Travels about 20 miles, equal to average use during a standard work shift, before the batteries need recharging.

KAL-TRUK. Available in two models-Gas-powered. Handle all kinds of bulk materials, including castings, forgings, parts. Easily climb 20% to 30% ramps. Fast, highly maneuverable, easy to handle. Efficient in congested areas, over rough ground. Built for round-the-clock heavy duty service. Quickly pay for themselves.

For complete information about any of these Kalamazoo time-and-money savers, mail the handy coupon.









Serving Industry and Railroads All Over the World Since 1883

Please send full details on the	following Kalamazoo machines:
Model 2500 Speed Truck	Model E-1900 Electric Truck
Model 3600 Tractor	☐ Electric Runabout
☐ Xpediter	☐ Kal Truk

Name	***************************************	
Title	***************************************	
	***************************************	
Street		

 Company...

 Street...

 City...
 Zone...

 State...

Circle No. 85 on Reader Service Card for more information

#### NEW EQUIPMENT SECTION

an extra large funnel housing to accomodate parts up to 3 inches long. The flow of parts is continuous, and the manufacturer claims that the operator can easily perform other jobs while tending the machine. The manufacturer guarantees 100 percent accuracy of

Circle 275 on Reader Service Card

#### Accurate Weighing with Electronic System

An electronic weighing system combines a load cell, containing strain gage pick-up, with a digital indicator. It is available from Performance Measurements Co. for laboratory and production batch-weighing applications. The indicator features a continuous



balance electronic potentiometer and a servo motor which drives precision number wheels. Accuracy of system is 0.1 percent; readability is one part in 10,-000, using 4 number wheels. Output readings may be calibrated in convenient quantities (pounds, ounces), or in pieces for weigh-counting. Also available is a system with coded digital output for connection to computers or central recording stations.

Circle 276 on Reader Service Card

#### High Lift Block For Bridge Cranes

Announcement of the availability of the new Miller High Lift Block was made by the General Machine and Welding Works, Inc. This item was designed especially for traveling and bridge cranes. Constructed of heavy steel welded plate for rigidity and strength. Bronze or roller bushings. Large diameter center pins (alloy steel.



heat-treated and ground) give longer bushing life and low starting torque. Additional features: cast steel sheaves with machined wire rope grooves, individual sheave lubrication, enclosed sheave guard drop-forged steel hook with Timken bearings. The High Lift Block comes in various sizes and working load tons, from 5 to 50 ton capacities.

Circle 277 on Reader Service Card



on the lightest-weight steel conveyor available—the sturdy American LOAD-VEYOR. This portable conveyor has exclusive zig zag grids that support both sides of each ball-bearing wheel. Narrow packages ride smoothly between the side rails, or the conveyor sections can be inverted to handle overhanging loads.

LOAD-VEYOR, industry's Magic Carpet, is the most versatile, durable, and economical sectionalized conveyor you can buy. See it at your local distributor.

A product of

The American Pulley Company

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Circle 115 on Reader Service Card



FLOW

#### CLASSIFIED ADVERTISING SECTION

#### USED EQUIPMENT-MEN-JOBS-LINES

Rates: for "Positions Wanted" \$8.00 minimum, limit 25 words. For all other classifications \$10.00 minimum for 25 words; each additional word 25c. Boldface type or all caps, \$12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

#### REPRESENTATIVES WANTED

WANTED: MANUFACTURER'S REPRESENTATIVES for complete line of custom conveyor and automation equipment. New division with vast experience needs representation. Conveyor & Automation Div., Pressweld, Inc., 825 S. Mahoning Ave., weld, Inc., 82 Alliance, Ohio.

#### FOR SALE

18,000 lb. Capacity Fork Truck Ross Lift Truck, model 15 LH, serial #12332, 18,000# lift capacity, figured at 75% of tipping load, 17 6" lift height, 6-ft. forks. Good condition. height, 6-1t. 1018s. Good condition. Surplus to our needs. Can be seen anytime. Lumber Drying Specialty Co., 1525 Jefferson, S. E., Grand Rapids, Mich.

MANUFACTURER OF SKIDS and special material handling equipment, long established with nation-wide joblong established with nation-wide job-bers, agents, and customers. No plant, machinery or inventory as products are made outside and drop-shipped. Must sell to devote time to other growing interests. An unusual oppor-tunity. Write c/o FLOW Box 11157.

#### HELP WANTED

#### MECHANICAL ENGINEER

challenging opportunity for first class designer; industrial power truck or automotive experience desirable; congenial connection for man of character and ability. Write in confidence. J. W. Wunsch, Silent Hoist & Crane Co., 888 63rd St., Brooklyn 20, N. Y.

MATERIALS HANDLING EQUIP-MENT REPRESENTATIVES Sell the newest, fastest moving, big profitmaking portable conveyor on the market. Proved in hundreds of applica-tions, coast to coast. Stores, warehouses, industrial plants, farms, etc. all want this package handling conveyor. Manufactured by AAAA rated company. Liberal commission or discount arrangement. Earn a substantial living selling full time or as a valuable addition to your present lines. Write c/o FLOW Box 11257

NATIONAL ACCOUNTS SALES MGR. Outstanding opportunity on corporate staff for materials handling engineer. One of America's largest materials handling producers and distribution companies with multi-plant operations has an opening for a top notch sales man-

STARTING SALARY RANGE: \$10,000-\$16,000 plus incentive earnings and

many company benefits.
REQUIREMENTS: Age: 30-45, college graduate or equal experience in materials handling and sales. Must have a wide acquaintanceship with major ac-counts both industrial and commercial, have a thorough understanding of materials handling and storage. Personality must be outstanding; the man selected will have the poise and tact to deal effectively with top level executives.

If you think you have these qualifications, write immediately, giving a complete resumé of your experience, edu-cation and present earnings. WRITE C/O FLOW BOX 11357

ITA Handbook Released

THREE YEARS' work went into the Industrial Truck Association's just-published Handbook of Powered Industrial Trucks. It's a plastic-bound product; 96-pages' worth of solid meat for men who buy and apply material handling equipment. ITA committees split their big subject into five sections, then covered each from practical and technical approaches:

Section 1, industrial truck applications, shows where (with a number of case studies) trucks pay off. Section 2 shows how.

Major factors of truck planning and selection go into Section 3. It covers equipment types handily, considers power, loading, problem analysis, attachments and safety.

For engineers, Section 4 alone is worth the price. Its 20 pages condense engineering data to help apply trucks to specific handling situations. Tables, graphs and charts the data easy-to-use.

Section 5 tells what to look for in terms of future truck applications.

There's a whale of a lot of knowhow compressed into this book. With its nearly 200 illustrations, it's the kind of thing most material handling men will want within reach. Copies are available from the Industrial Truck Association. Ninth and F Streets, Washington 4, D. C. Single copy: \$5,

# **4 Big Reasons**

why you should buy a

#### Hydro Lectric LIFT TRUCK



CONTROL COMPLETE at your finger tims



SEALED ALLOY GEAR DRIVE for long service life



TWIN DRIVE WHEELS with differential for ease of steering and good stability



HEAVY DUTY MOTOR completely enclosedhighly efficient easy accessibility



Compare the Hydrolectric features with any other "Driver Lead" Lift Truck. The Hydrolectric quality of construction merits your inquiry. Two driving wheels instead of one — 50 % easier steering — ease of maintenance.

Write for Catalogue #35 today showng various models and their features. NOTE: The Dyna-Dual Power Unit is interchangeable on all models.





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#### From this ...







#### **NEW DAMPER ENDS DAMAGE FROM SHOCK!**

Don't let shock steal your production and profits! Install the new Greer Damper easily, quickly and at low cost...then see and feel the big difference!

Longer Life for Lift Truck! Greer Damper eliminates harmful shock that damages cylinders, hose, packings and causes structural strain. Parts last longer and perform better! Cuts downtime and maintenance. Reduces operating costs.

Save Spillage and Breakage! Fragile glassware, eggs, bottles, bags of cement — anything can be handled faster, safer. Reduces danger of costly delays and customer claims for damaged goods.

Up Driver Output! Driver rides more comfortably with closer control over direction and load. Lift trucks move faster with bigger loads with the Greer Damper to absorb the shock and vibration.

#### SEE YOUR LIFT TRUCK DEALER

for Greer Bulletin 1100 for full details, or write: Greer Hydraulics Incorporated, Jamaica 30, N.Y.

Equipto Div.,

Aurora Equipment Co.

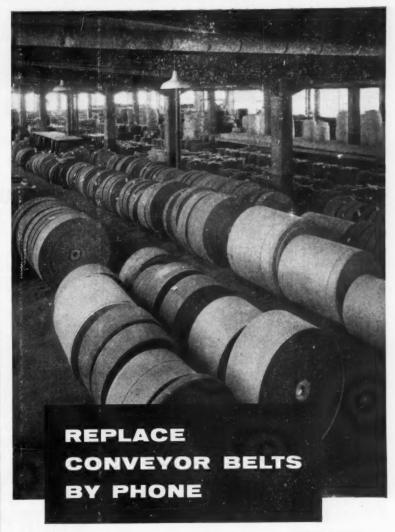
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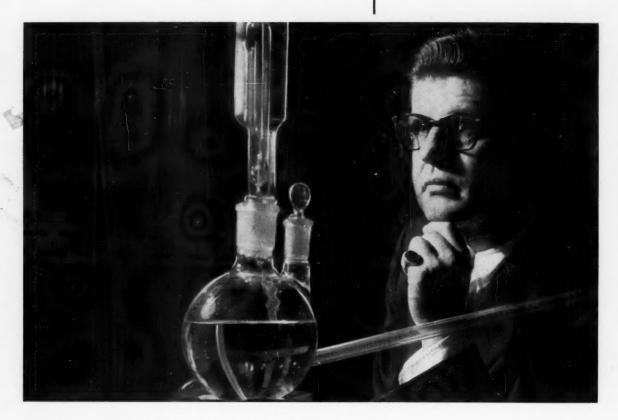


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